bürkert
FLUID CONTROL SYSTEMS

2/2-Way Proportional Valve (motor-driven)

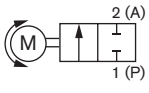
- Seat valve with stepper motor - actuator isolated from flow path
- Excellent range (1:100)
- Low power consumption
- Fast response
- Orifice sizes 2 to 6 mm
- Port connection 1/4" and 3/8"

Type 3280 can be combined with …

Type 8611
Compact PI Controller

The direct-acting motor control valve Type 3280 serves as a regulating element in various control loops. A linear stepper motor as actuator drives the valve, which comes in a compact and robust housing. Analogue setpoint signals are processed by the integrated control electronics. Due to an elastomeric seat seal the valve closes tight up to the DN specific nominal pressure (see ordering chart on p. 5). In case of power failure, the actual valve position will be kept. The motor's power consumption to hold a specific opening position of the valve is nearly zero. The motor needs power only during set point changes. This key feature can reduce the energy consumption of a plant dramatically and thus make it more efficient. This valve is particularly suited for demanding control tasks (high control range, accurate repeatability etc.).

Circuit function
2-way valve for continuous control, motor driven, remains in position without further electrical power



Technical data	
Materials	
Body	Brass or stainless steel
Housing	PC (Polycarbonate), PPS (Polyphenylene sulfide)
Seals	FKM or NBR, others on request
Medium	Neutral gases, liquids
Pressure Range [1]	0 to 6 bar
Closure time	2.5 s (0 to 100% stroke)
Fluid temperature	0 to +70 °C
Ambient temperature	-10 to +60 °C
Viscosity	Max. 600 mm²/s (cSt)
Power supply	24 V DC ± 10% (max. residual ripple 10%)
Power consumption	Max. 8 W (depending on motor control), <1 W in holding position
Duty cycle	Up to 100 % (depending on fluid and ambient temperature)
Port connection	G 1/4, G 3/8, NPT 1/4, NPT 3/8
Electrical connection	M12 connector, 8-pin, male
Input signal	4-20mA or 0-10 V
Input impedance	60 Ω (with current input) 22 kΩ (with voltage input)
Output signal	Load capacity: 10…30V, max 100mA, PNP (Output signal active, if valve is closed)
Typical control data [2]	
Hysteresis	< 5%
Repeatability	<1 % FS
Sensitivity	<1 % FS
Span	1:100
Protection class - valve	IP 50
Installation	As required, preferably with actuator upright
Status of LED	White: Normal operation and powered, Yellow: Valve opened, Green: Valve closed, Red: Failure
Dimensions	See drawings on page 4
Weight	~0.7 kg

[1] Pressure data [bar]: Overpressure with respect to atmospheric pressure
[2] Characteristic data of control behaviour depends on process conditions

По вопросам продаж и поддержки обращайтесь:

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Advice for valve sizing

In continuous flow applications, the choice of an appropriate valve size is much more important than with on/off valves. The optimum size should be selected such that the resulting flow in the system is not unnecessarily reduced by the valve. However, a sufficient part of the pressure drop should be taken across the valve even when it is fully opened.

Recommended value: Pressure drop of valve > 25 % of total pressure drop within the system

Otherwise, the ideal, linear valve curve characteristic is changed. If the differential pressure (difference between inlet and outlet pressure) exceeds half the value of the nominal pressure, the characteristics may change.

For that reason take advantage of Bürkert competent engineering services during the planning phase!

Determination of the k_V value

Pressure drop	k_V value for liquids [m³/h]	k_V value for gases [m³/h]
Subcritical $p_2 > \frac{p_1}{2}$	$= Q \sqrt{\frac{\rho}{1000\ \Delta p}}$	$= \frac{Q_N}{514} \sqrt{\frac{T_1\ \rho_N}{p_2\ \Delta p}}$
Supercritical $p_2 < \frac{p_1}{2}$	$= Q \sqrt{\frac{\rho}{1000\ \Delta p}}$	$= \frac{Q_N}{257\ p_1} \sqrt{T_1\ \rho_N}$

k_V	Flow coefficient	$[m^3/h]$ [3]
Q_N	Standard flow rate	$[m_N^3/h]$ [4]
p_1	Inlet pressure	[bar] [5]
p_2	Outlet pressure	[bar] [5]
Δp	Differential pressure p_1-p_2	[bar]
ρ	Density	$[kg/m^3]$
ρ_N	Standard density	$[kg/m^3]$
T_1	medium temperature	[(273+t)K]

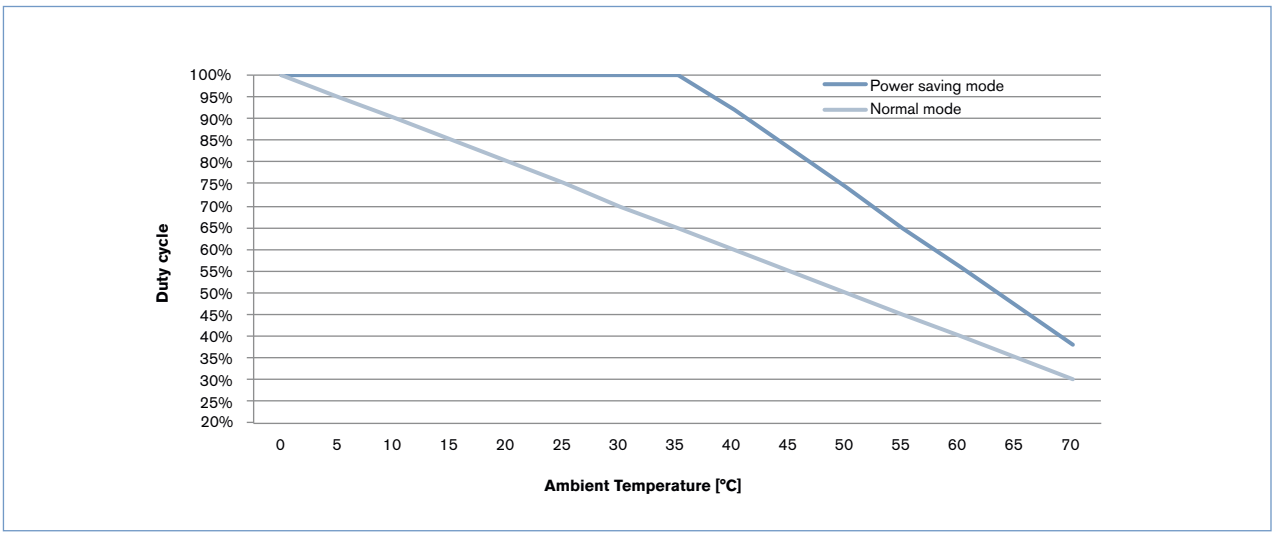
[3] Measured with water, Δp =1 bar, differential pressure over the valve
[4] Standard conditions at 1,013 bar and 0 °C (273K)
[5] Absolute pressure

Once the k_V value needed for the application has been calculated, you can compare it with the k_{Vs} values shown in the ordering chart. The k_{Vs} must be higher than the k_V value of the application, but neither too high, nor too close – as a recommendation: 10% higher.

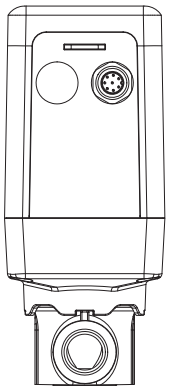
Duty Cycle Derating Curve

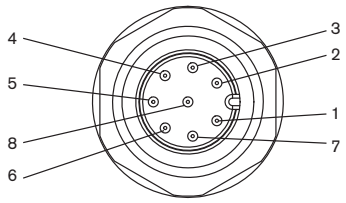
For motor valves it is essential to know the duty cycle during operation. Self-heating of the motor limits the maximum duty cycle. High ambient temperatures amplify the risk of damage due to overheating. The diagram below shows the suggested duty cycles dependent on the ambient temperature. Running the motor control valve in the power saving mode (lower actuator force) allows higher duty cycles. The motor is optimized for the valve function regarding dimensions, power consumption and costs.

Note: Operating the valve beyond the suggested duty cycles leads to a drastically reduced lifetime of the valve.



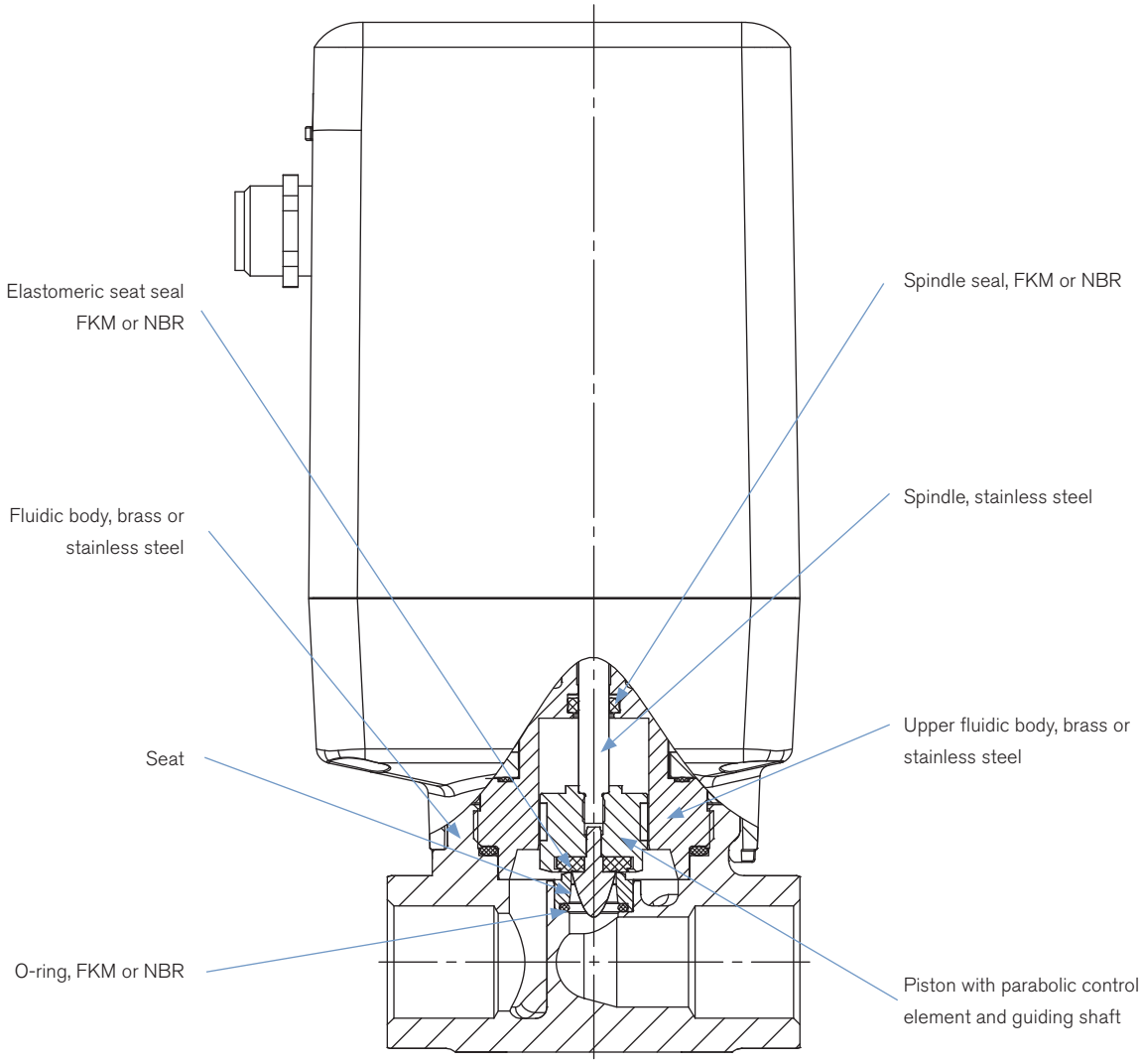
Pin Assignment





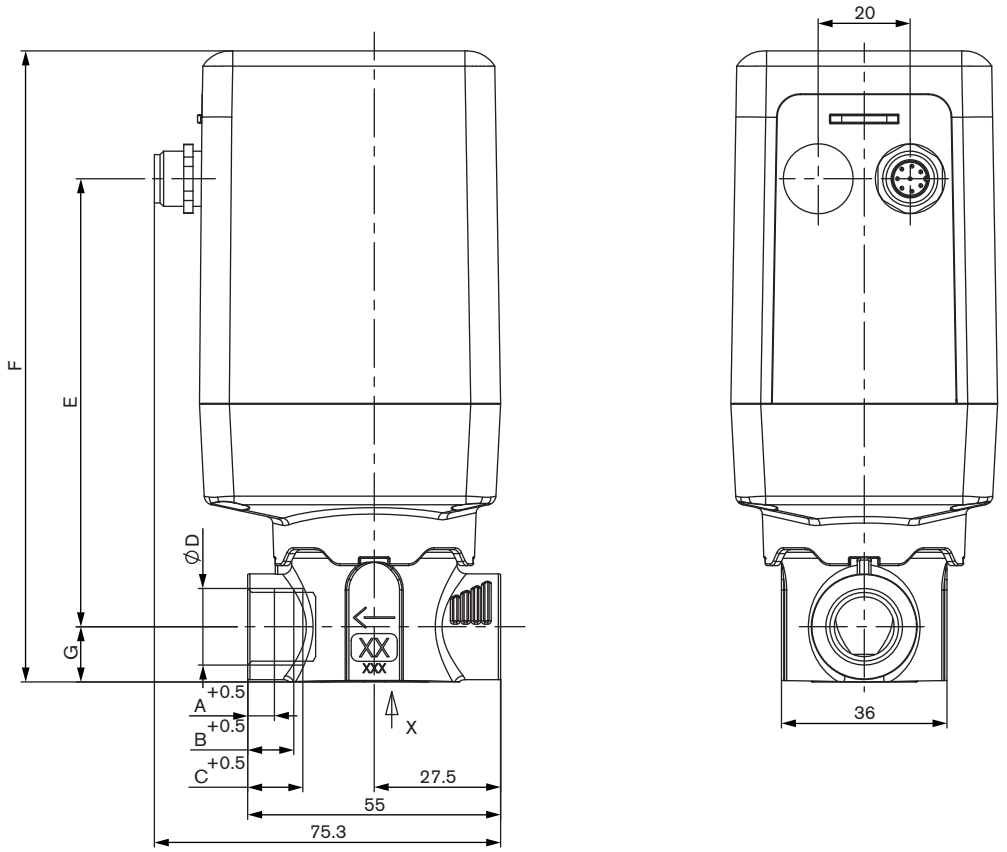
Circular connector M12 - 8-pin	Pin	Assignment
	1	24V DC
	2	GND
	3	Not connected
	4	Not connected
	5	Not connected
	6	Analogue input +
	7	Binary output
	8	Analogue input GND

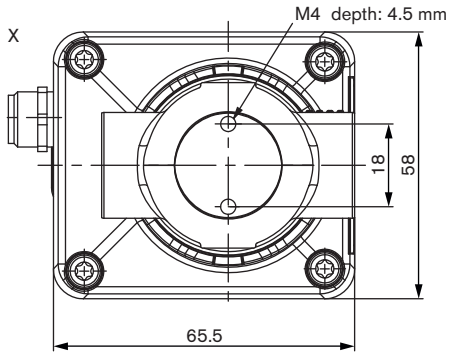
Materials



Dimensions [mm]

Standard version





A	B	C	D	E	F	G
		12	G 3/8	97.4	137.2	12
6	10.3		NPT 3/8	97.4	137.2	12
		12	G 1/4	96.4	134.2	10
5.8	10		NPT 1/4	96.4	134.2	10

Ordering Chart

Valve function	Orifice [mm]	Port Connection	Seal material	k_{Vs} value water [m³/h] [6]	Nominal pressure [barg] [7]	Item no. brass	Item no. stainless steel
Control valve, without safety position in case of power failure	2	G 1/4	FKM	0.15	6	268 611	268 620
			NBR	0.15	6	268 616	268 624
		NPT 1/4	FKM	0.15	6	268 628	268 636
			NBR	0.15	6	268 632	268 640
	3	G 1/4	FKM	0.3	6	268 613	268 621
			NBR	0.3	6	268 617	268 625
		NPT 1/4	FKM	0.3	6	268 629	268 637
			NBR	0.3	6	268 633	268 641
	4	G 3/8	FKM	0.5	6	268 614	268 622
			NBR	0.5	6	268 618	268 626
		NPT 3/8	FKM	0.5	6	268 630	268 638
			NBR	0.5	6	268 634	268 642
	6	G 3/8	FKM	0.9	6	268 615	268 623
			NBR	0.9	6	268 619	268 627
		NPT 3/8	FKM	0.9	6	268 631	268 639
			NBR	0.9	6	268 635	268 643

[6] Measured with water (20°C) and 1 bar pressure drop over valve
[7] Fuel gases may differ

Ordering Chart for Accessories

Article	Item No.
M12 connector with 2m cable, 8 pins	919 061
M12 connector with 2m cable, 8 pins (shielded cable)	918 991

bürkert
FLUID CONTROL SYSTEMS

2/2-Way Proportional Valve (motor-driven)

- Disc valve with stepper motor - Actuator isolated from flow path
- Excellent range (1:100)
- Low power consumption
- Orifice sizes 8 ... 25 mm
- Port connection 1/2", 3/4" and 1"

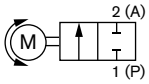
Type 3285 can be combined with …

Type 8611
Compact PI Controller

The direct-acting motor control valve Type 3285 is used as the regulating unit in various control loops. A stepper motor as actuator drives the valve which is incorporated in a compact and robust housing. Analogue setpoint signals are processed by the integrated control electronics. The drive shaft shifts a very smooth ceramic disc over a second fixed ceramic disc. The fixed ceramic disc is simultaneously the valve seat. By turning the ceramic disc the valve opens. The seat tightness is achieved by the very smooth surface of the stacked ceramic discs. In case of power failure the actual valve position will be kept. The motor's power consumption to hold a specific opening position of the valve is nearly zero. The motor needs power only during set point changes. This key feature can reduce the energy consumption of a plant dramatically and thus make it more efficient. This valve is particularly suitable for demanding control tasks (high control range, dry gases, etc.).

Circuit function

2-way valve for continuous control, motor driven, remains in position without further electrical power



Technical data	
Materials	
Body	Brass or stainless steel
Housing	PC (Polycarbonate), PPS (Polyphenylene sulfide)
Seals	FKM or NBR, others on request
Seat sealing	Technical ceramics
Medium	Neutral gases, liquids
Seat leakage based on IEC/EN 60534-4	Shut-off class IV
Pressure Range [1]	0…6 bar
Closure time	Ca. 4 sec
Medium temperature	0…+70 °C
Ambient temperature	-10 ... +60 °C
Power supply	24 V DC ± 10% (max. residual ripple 10%)
Power consumption	Max. 12 W (depending on motor control) Ca. 1 W in holding position
Duty cycle	Up to 100 % (depending on fluid and ambient temperature)
Port connection	G 1/2, G 3/4, G 1, NPT 1/2, NPT 3/4, NPT 1
Electrical connection	M12 connector, 8-pin, male
Input signal	4-20mA or 0-10 V
Input impedance	60 Ω (with current input) 22 kΩ (with voltage input)
Output signal	Load capacity: 10…30V, max 100mA, PNP (Output signal active, if valve is closed)
Typical control data [2]	
Hysteresis	< 5%
Repeatability	<1 % FS
Sensitivity	<1 % FS
Span	1:100
Protection class - valve	IP 50
Installation	As required, preferably with actuator upright
Status of LED	White: Normal operation and powered, Yellow: Valve opened, Green: Valve closed, Red: Failure
Dimensions	See drawings
Weight	~ 800g (DN8) … 1500g (DN25)

[1] Pressure data [bar]: Overpressure with respect to atmospheric pressure
[2] Characteristic data of control behaviour depends on process conditions

Advice for valve sizing

In continuous flow applications, the choice of an appropriate valve size is much more important than with on/off valves. The optimum size should be selected such that the resulting flow in the system is not unnecessarily reduced by the valve. However, a sufficient part of the pressure drop should be taken across the valve even when it is fully opened.

Recommended value: Pressure drop of valve > 25 % of total pressure drop within the system

Otherwise, the ideal, linear valve curve characteristic is changed. If the differential pressure (difference between inlet and outlet pressure) exceeds half the value of the nominal pressure, the characteristics may change.

For that reason take advantage of Bürkert competent engineering services during the planning phase!

Determination of the k_V value

Pressure drop	k_V value for liquids [m³/h]	k_V value for gases [m³/h]
Subcritical $p_2 > \frac{p_1}{2}$	$= Q \sqrt{\frac{\rho}{1000\ \Delta p}}$	$= \frac{Q_N}{514} \sqrt{\frac{T_1\ \rho_N}{p_2\ \Delta p}}$
Supercritical $p_2 < \frac{p_1}{2}$	$= Q \sqrt{\frac{\rho}{1000\ \Delta p}}$	$= \frac{Q_N}{257\ p_1} \sqrt{T_1\ \rho_N}$

k_V	Flow coefficient	[m³/h] [3]
Q_N	Standard flow rate	[m_N^3/h] [4]
p_1	Inlet pressure	[bar] [5]
p_2	Outlet pressure	[bar] [5]
Δp	Differential pressure p_1-p_2	[bar]
ρ	Density	[kg/m³]
ρ_N	Standard density	[kg/m³]
T_1	medium temperature	[(273+t)K]

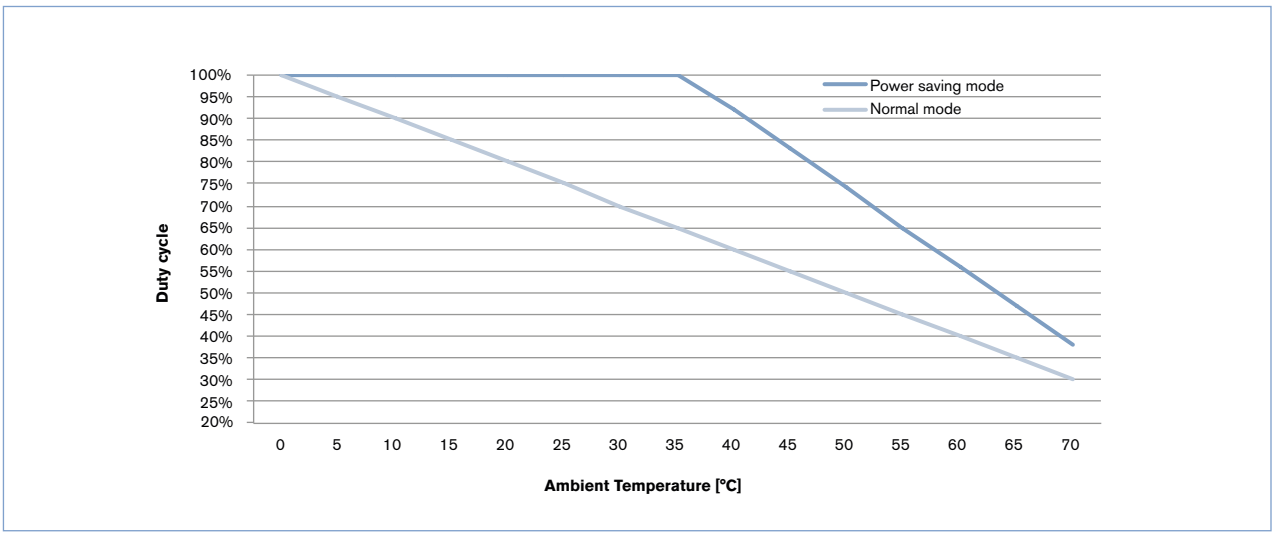
[3] Measured with water, Δp =1 bar, differential pressure over the valve
[4] Standard conditions at 1,013 bar and 0 °C (273K)
[5] Absolute pressure

Once the k_V value needed for the application has been calculated, you can compare it with the k_{Vs} values shown in the ordering chart. The k_{Vs} must be higher than the k_V value of the application, but neither too high, nor too close – as a recommendation: 10% higher.

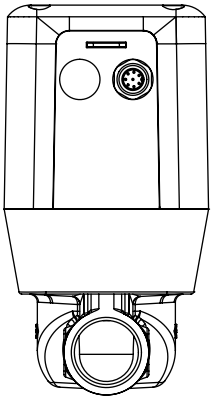
Duty Cycle Derating Curve

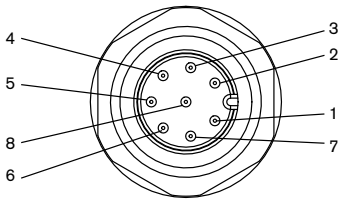
For motor valves it is essential to know the duty cycle during operation. Self-heating of the motor limits the maximum duty cycle. High ambient temperatures amplify the risk of damage due to overheating. The diagram below shows the suggested duty cycles dependent on the ambient temperature. Running the motor control valve in the power saving mode (lower actuator force) allows higher duty cycles. The motor is optimized for the valve function regarding dimensions, power consumption and costs.

Note: Operating the valve beyond the suggested duty cycles leads to a drastically reduced lifetime of the valve.

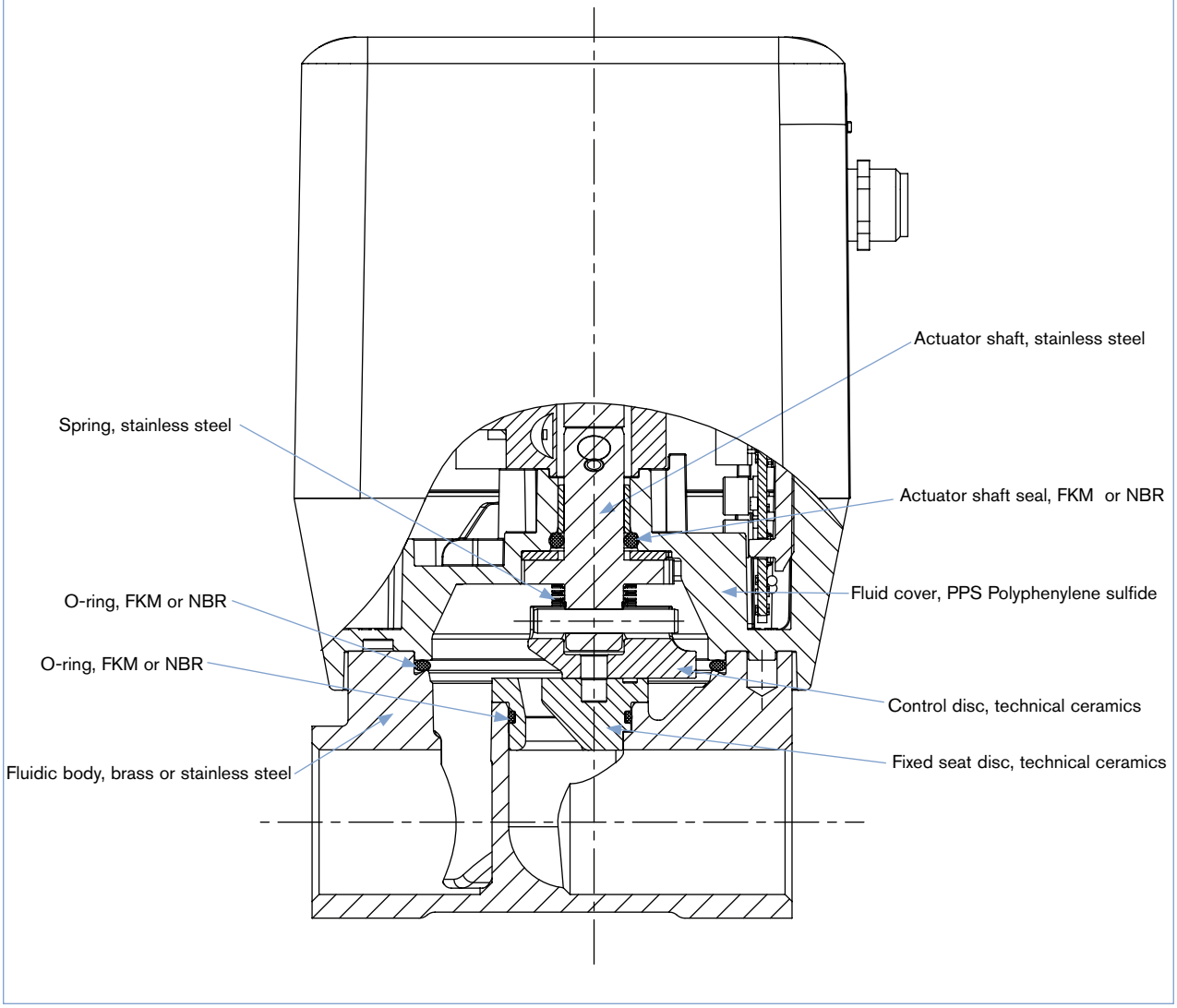


Pin Assignment



Circular connector M12 - 8-pin	Pin	Assignment
	1	24V DC
	2	GND
	3	Not connected
	4	Not connected
	5	Not connected
	6	Analogue input +
	7	Binary output
	8	Analogue input GND

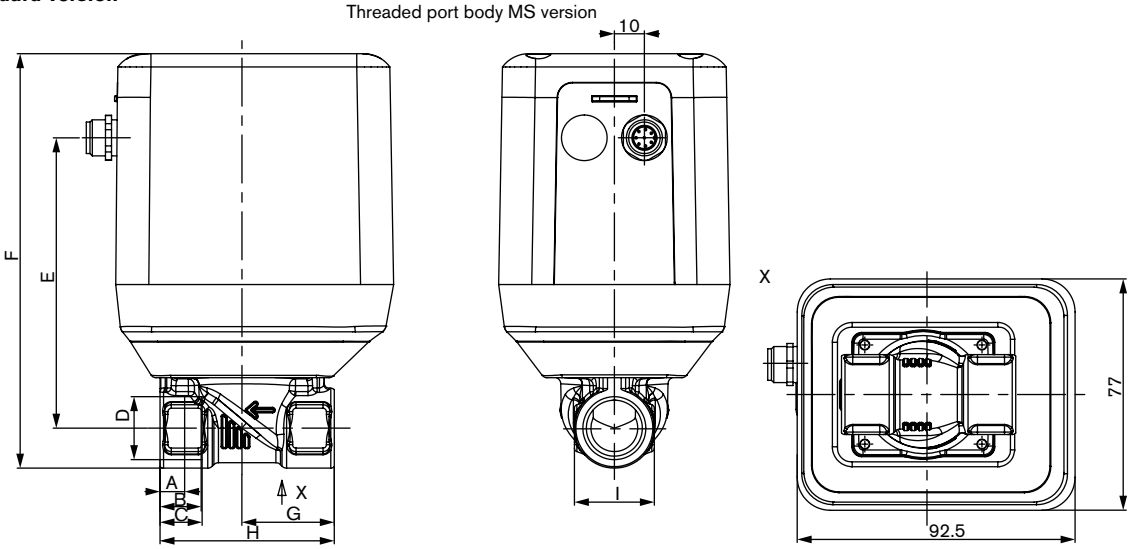
Materials



Dimensions [mm]

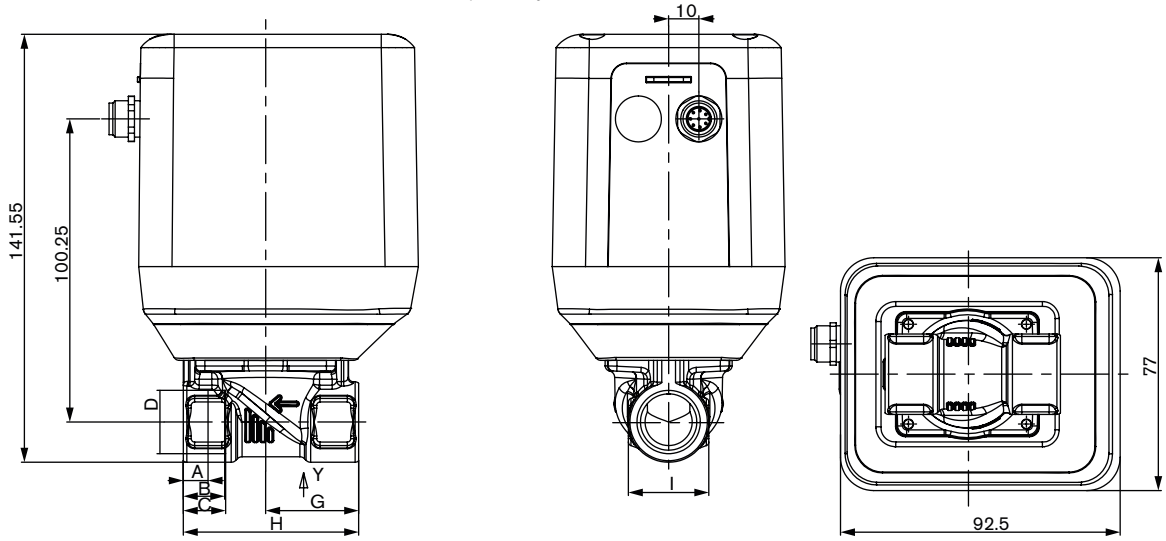
Standard version

Threaded port body MS version



A	B	C	D	E	F	G	H	I
8.2	13.7	-	NPT 1/2	96.65	137.95	30.75	58	26.6
-	-	14	G 1/2	96.65	137.95	30.75	58	26.6
8.6	14	-	NPT 3/4	103.34	147.01	43	80	32
-	-	16	G 3/4	103.34	147.01	43	80	32
10.2	16.8	-	NPT 1	108.31	156.35	49	95	41
-	-	18	G 1	108.31	156.35	49	95	41

Threaded port body VA version



A	B	C	D	E	F	G	H	I
8.2	13.7	-	NPT 1/2	100.25	141.55	30.75	58	26.6
-	-	14	G 1/2	100.25	141.55	30.75	58	26.6
8.6	14	-	NPT 3/4	107.81	151.35	43	80	32
-	-	16	G 1/2	107.81	151.35	43	80	32
10.2	16.8	-	NPT 1	113.09	161.15	49	95	41
-	-	18	G 1	113.09	161.15	49	95	41

Ordering Chart

Valve function	Orifice [mm]	Port connection	Seal material	k_{VS} value water [m³/h] [6]	Nominal pressure [7] [barg]	Item no. Brass	Item no. Stainless steel
Control valve, without safety position in case of power failure	8	G 1/2	FKM	1.8	6	269 244	269 256
			NBR	1.8	6	269 250	269 262
		NPT 1/2	FKM	1.8	6	269 268	269 280
			NBR	1.8	6	269 274	269 286
	10	G 1/2	FKM	2.5	6	269 245	269 257
			NBR	2.5	6	269 251	269 263
		NPT 1/2	FKM	2.5	6	269 269	269 281
			NBR	2.5	6	269 275	269 287
	12	G 3/4	FKM	3.9	6	269 246	269 258
			NBR	3.9	6	269 252	269 264
		NPT 3/4	FKM	3.9	6	269 270	269 282
			NBR	3.9	6	269 276	269 288
	15	G 3/4	FKM	6.0	6	269 247	269 259
			NBR	6.0	6	269 253	269 265
		NPT 3/4	FKM	6.0	6	269 271	269 283
			NBR	6.0	6	269 277	269 289
	20	G 1	FKM	8.8	6	269 248	269 260
			NBR	8.8	6	269 254	269 266
		NPT 1	FKM	8.8	6	269 272	269 284
			NBR	8.8	6	269 278	269 290
	25	G 1	FKM	12.3	6	On request	On request
			NBR	12.3	6	On request	On request
		NPT 1	FKM	12.3	6	On request	On request
			NBR	12.3	6	On request	On request

[6] Measured with water (20°C) and 1 bar pressure drop over valve
[7] Fuel gases may differ

Ordering Chart for Accessories

Article	Item No.
M12 connector with 2m cable, 8 pins	919 061
M12 connector with 2m cable, 8 pins (shielded cable)	918 991

bürkert
FLUID CONTROL SYSTEMS

Electromotive process valve - 2-way angle-seat control valve

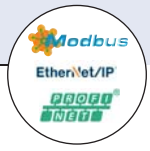
- good and fast control
- weather, impact and vibration resistant design
- easy cleaning by its design according hygienic demands
- many diagnostic functions by monitoring of valve and operation data

options

Rugged Display
with operating buttons

SAFEPOS
energy-pack

Type 3361
for highest control accuracy



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The innovative process controller Bürkert valve Type 3360 is the solution when it comes to control tasks under demanding operating conditions. The electromotive actuator with ball screw positions the control come with highest precision. A unique feature is its high positioning speed of 6 mm/s, that reacts quasi delay-free to process signals, and can be varied according to customer demands. Pressure variations or shocks in the medium aren´t transferred to the valve position. If necessary, the safety position can be approached by an optional energy storage in case of power failure. Actuator and valve are adapted perfectly to each other with closed design and robust surface. This ensures the hygienic requirements of a fast and residue-free cleaning. Harsh environment are no problem for the Type 3360 because of the protection class IP65 / IP67 and its high impact and vibration resistance. Unrivalled cycle life and sealing integrity is guaranteed by the proven self adjusting spindle packing with exchangeable V-seals. The fieldbus suitable Type 3360 provides many helpful functions for process monitoring, valve diagnostics and predictive maintenance and thus offers the decisive advantage of a modern process automation.

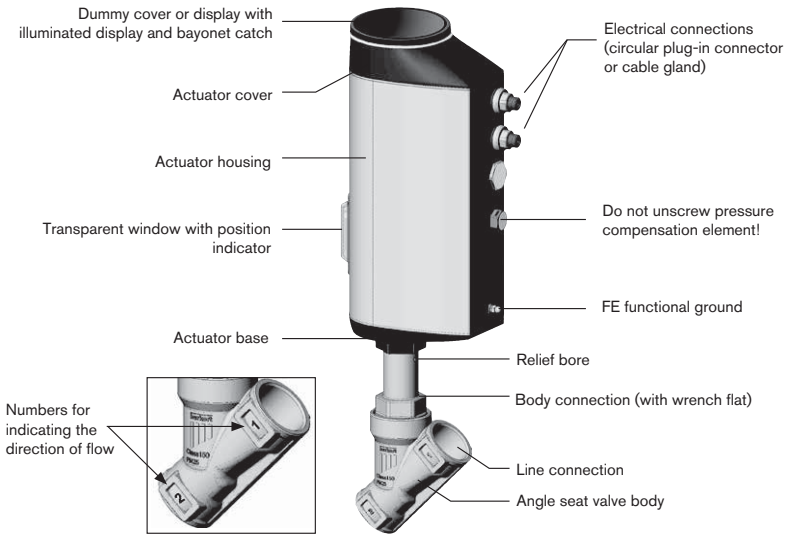
Technical data	
Kvs values	5 ... 53 m³/h
Port size	DN 15 ... DN 50
Operating pressure	16 bar / 1600 kPa / 232 psi
Port connections ▪ thread ▪ weld ends ▪ clamp	 ▪ G, RC, NPT (EN ISO 228-1, ISO 7/1 /DIN EN 10226-2, ASME B 1.20.1) ▪ EN ISO 1127 / ISO 4200, DIN 11850 R2, ASME BPE, BS 4825-1, SMS 3008 ▪ ISO 2852, DIN 32676, ASME BPE, BS 4825
Medium	Neutral gases, water, alcohol, oils, fuel, hydraulic mediums, salt solution, alkali solutions, organic solvents, steam
Viscosity	max. 600 mm²/s
Media temperature	-10...+185 °C (seat sealing steel/steel) -10...+185 °C (seat sealing PEEK/steel) -10...+130 °C (seat sealing PTFE/steel)
Ambient temperature	-25 °C … +65 °C (without touch display) -25 °C … +60 °C (with touch display) -25 °C … +55 °C (with SAFEPOS energy storage) Note: Derating see temperature chart
Seat leakage according IEC 534-4/EN 1349	Shut-off class III and IV for steel/steel Shut-off class VI for PTFE/steel and PEEK/steel
Safety position at power failure	with SAFEPOS energy-pack: opened, closed or free programmable without SAFEPOS energy-pack: blocked in last position
Power supply	24 V DC +/- 10% (max. residual ripple 10%)
Closing time	2.3 ... 4.3 s (depending on stroke)
Travel speed	6 mm/s
Duty cycle	100%
Protection class	IP65 / IP67
Analogue control	Setpoint: 0-20 mA, 4-20 mA, 0-5 V, 0-10 V actual value optional
Digital control (fieldbus)	EtherNet/IP, Modbus/TCP, Profinet
Approval and Conformity	FDA, EGV 1935/2004

Structure and function

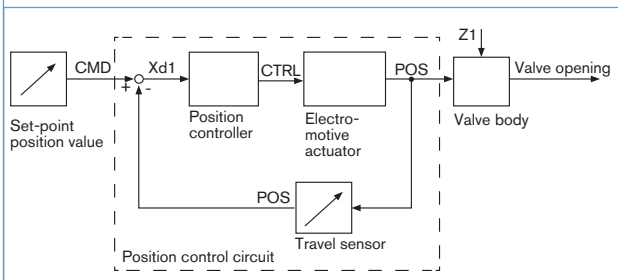
The electromotive linear actuator consists of a brushless direct current motor, gears and a threaded spindle. The valve spindle, which is connected to the threaded spindle, transfers the force to the control cone. The electronic control system of the position controller is actuated either via standard signals (analog) or via a field bus (digital). Optionally there is the energy pack (SAFEPOS energy-pack) for the device. If the supply voltage fails, the energy pack supplies the actuator with the required energy to move the valves into the required position which can be adjusted via a menu.

The valve position can be manually changed in 2 ways. Either over an electrical manual control or over mechanical manual control, if no supply voltage applied. The device can be set and operated either via 2 capacitive buttons and 4 DIP switches or optionally on a display with touch-screen. There is also the option of setting the device via the büs Service interfache and by using the PC software "Bürkert-Communicator".

The intelligent process valve Type 3360 offers the operator options for process monitoring, valve diagnostics and predictive maintenance. Internal measurements for the operating state are evaluated and, if issued as a warning or error message. This signal, for example, undue environmental and process conditions, functional deviations of components or the state of the energy accumulator. Internal measurements for operating state are evaluated and, possible a warning or error message is issued. This signal indicates, for example, bad environmental and process conditions, functional deviations of components or the state of the energy accumulator.

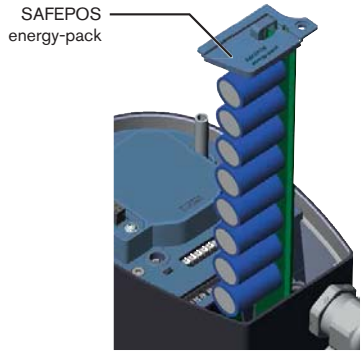


Structure, electromotive angle seat control valve Type 3360



Integrated position controller

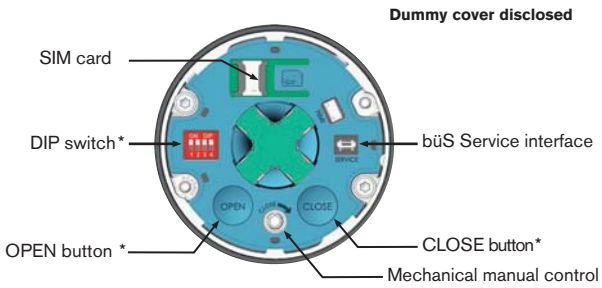
The position of the actuator (stroke) is regulated according to the set-point position value. The set-point position value is specified either by an external standard signal (analog) or via a field bus (digital). The travel sensor records the actual position (POS) of the electric linear actuator. The position controller compares this actual position value with the set-point position value (CMD) which is defined as standard signal. If there is a control difference (Xd1), the electromotive actuator is controlled via the CTRL variable and the actual position value is changed accordingly.



Safety position with energy storage (Option)

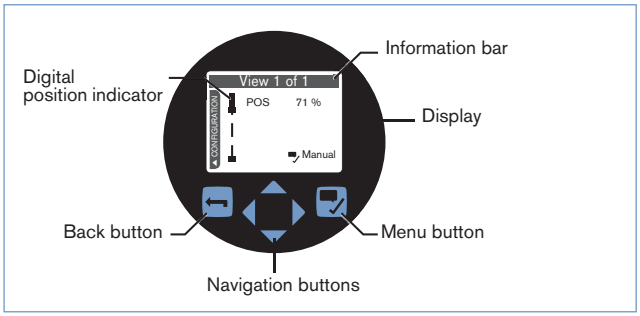
The safety starting positions in case of power interruption is realized with the optional energy storage SAFEPOS energy-pack. The desired position is adjusted from the menu. Here any intermediate position can be defined in addition to the end positions (NO / NC). The energy storage has a lifespan of up to 10 years, depending on the operating conditions. The power of the energy storage is monitored and a warning is displayed to indicate its life is coming to an end. The memory is designed as a plug-in module making it easy to exchange. Without energy storage, the valve remains in the last position.

Controls and indicators



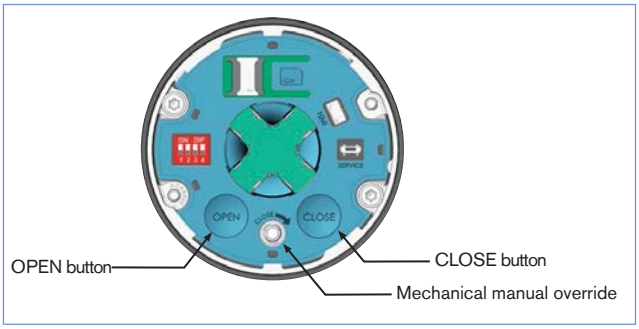
Devices without display module

In the version without control display the basic functions are operated by 4 DIP switches and 2 pushbuttons. These are located under the dummy cover which can be removed manual by turning. Through the büS service access, the device can also be configured in detail with the Bürkert communicator software. For this, the optional USB-büS interface kit is required.



Robust display with control buttons (optional)

The robust display module is easy to use, it configurates and displays all the required functions. In addition to the start screen you can also switch to the configuration view and user-specified views as needed. All functions of the device without display module like büS-Service interface are available, too.

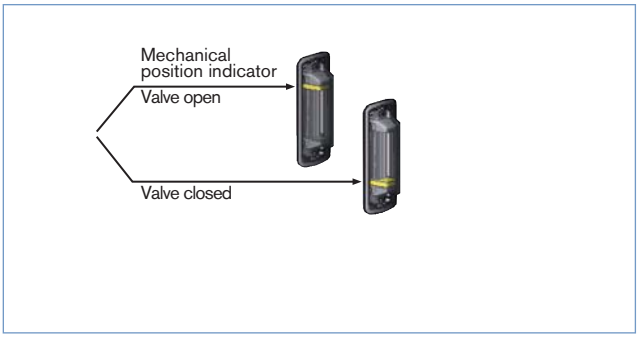


Manual and electrical operation

The manual override for mechanical operation of the valve is located under the dummy cover or the display module.
Electrical manual override for the procedure is carried out directly on the touch screen, or in the version without a display by two buttons below the dummy cover.

360°- LED Illuminated ring

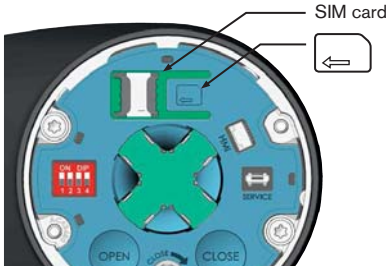
To display the device status, the valve end position and the operating condition, a visible 360° LED illuminated ring is mounted around the dummy cover or the display module. The LED ring lights up, flashes or flashes in one or different colors. Depending on customer requirements 4 different LED modes can be selected (Namur mode, valve mode without warnings, valve mode with warnings, LED off)



Mechanical position indicator

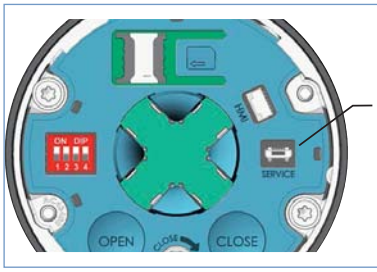
The mechanical position indicator also indicates when the supply voltage of the current valve position fails

Controls and indicators, continued



SIM card as data storage (option)

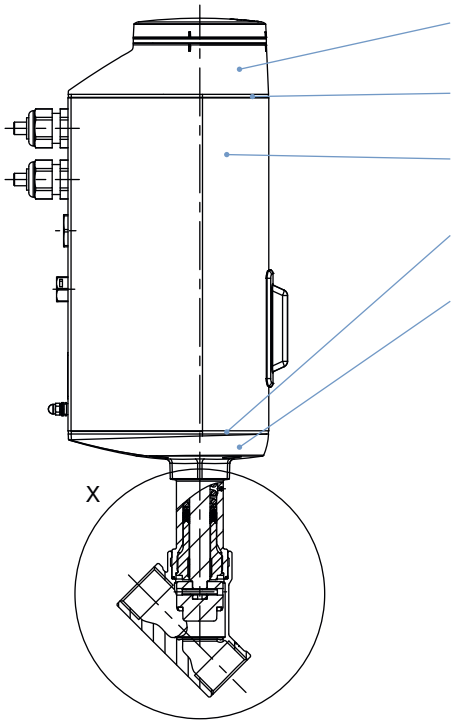
With the SIM card optional device-specific values and user settings can be saved and quickly transferred to another device.



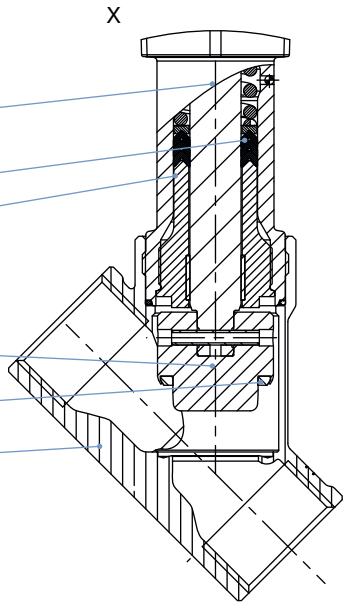
büS service interface

The büS service interface connects the device to the communicator software on a PC, laptop or smartphone. From there, a configuration of the device or failure diagnosis can be performed.

Design and materials view



Actuator top part:	PPS
Sealing:	EPDM
Actuator housing:	Aluminium powder-coated
Sealing:	EPDM
Actuator bottom part:	PPS



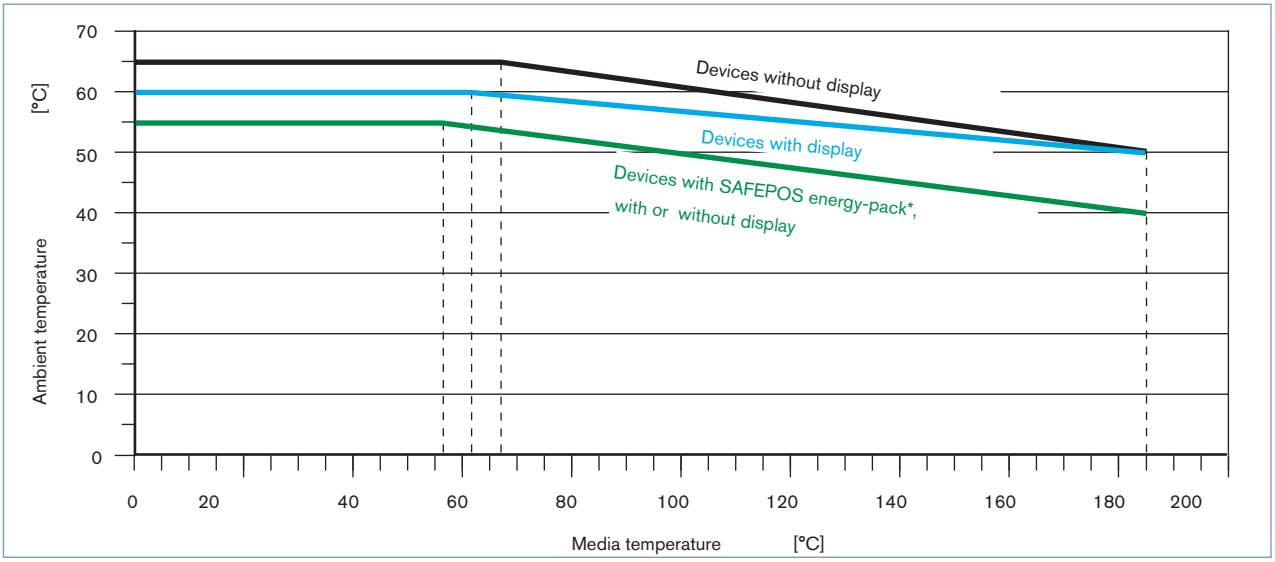
Spindle:	Stainless steel 1.4401 (316) /1.4404 (316L)
Spindle packing:	PTFE V-seals with spring compensation
Spindle guidance:	Stainless steel 1.4404 / 316L
Control cone:	Stainless steel 1.4571
Control cone seal:	Stainless steel 1.4571 / PTFE or PEEK disc for soft seat sealing
Valve body:	Stainless steel 316 L

Note: The angle-seat control valve **type 3360** could be delivered with miscellaneous port connection (thread, weld ends and clamp), there are not represented in the picture, but are made with same material as the valve body.

Technical data

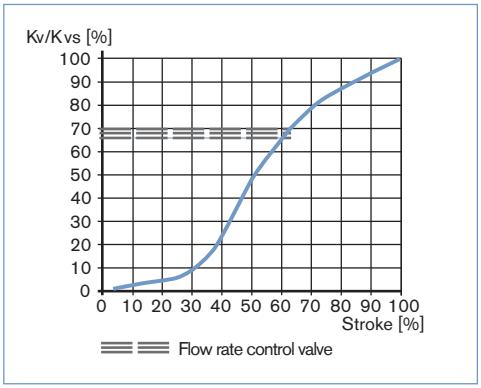
Temperature chart

The maximum allowable ambient temperature and media temperature influence each other. The maximum allowable temperature curves of different device variants can be seen in the temperature chart.



Flow characteristic

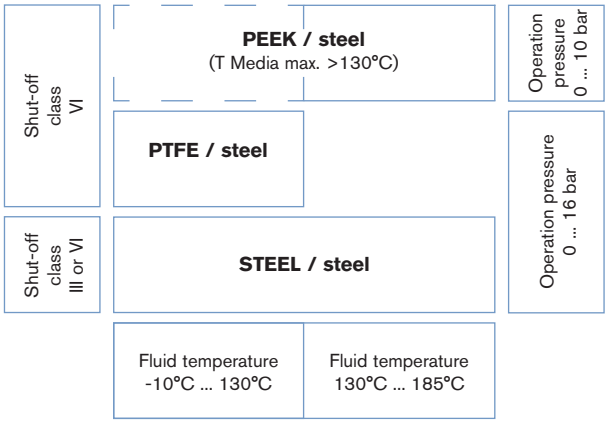
Modified equi-percentile flow characteristic, engineered for a quick response during peak flow demand and fine control at lower flow.
Theoretical control ratio (KvS : Kv0): 50:1
KvR-value at 5% of stroke



Selection chart for seat sealing

Seat sealing type steel / steel is recommended for shut-off class III and IV.

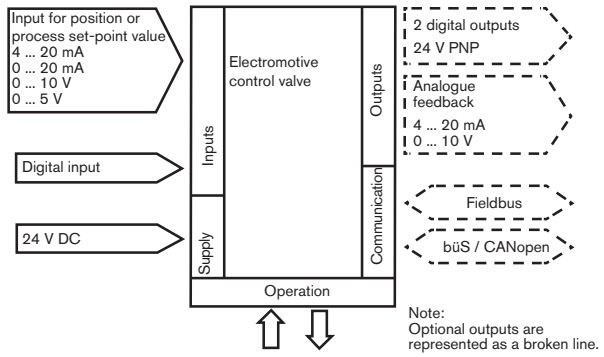
Seat sealing with PTFE is used for shut-off class VI, if fluid temperature is <130 °C. If the maximum fluid temperature exceeds 130°C temporarily or permanently, then PEEK is used for seat sealing.



Port connection (tube)		Media pressure / seat sealing		Leakage class / seat sealing		Kv-values with stroke [m3/h]						Kvs-value
		Stainless steel o. PTFE Stainless steel	PEEK / Stainless steel	PTFE o. PEEK / Stainless steel	Stainless steel / Stainless steel							
[mm]	[inch]	[bar]	[bar]			5%	10%	30%	50%	70%	90%	[m3/h]
15	1/2	16	-	VI	IV	0.16	0.17	0.4	2.7	4.0	4.8	5.0
20	3/4	16	10	VI	IV	0.26	0.27	1.1	5.9	8.3	9.6	10.0
25	1	16	10	VI	IV	0.34	0.36	1.5	8.9	13.0	15.4	16.0
32	1.25	16	10	VI	IV	0.40	0.46	2.5	13.9	19.5	23.4	25.0
40	1.5	10	6	VI	III	0.48	0.66	5.1	20.0	28.3	34.5	36.0
50	2	6	-	VI	III	0.87	1.2	4.0	26.0	40.3	48.0	53.0

Electrical control

Electrical data	
Protection class	3 acc. to DIN EN 61140
Electrical connections	Cable gland, 2 x M20 or 2 circular plug-in connector M12, 5-pin and 8-pin
Operating voltage	24 V DC ± 10 % max. residual ripple 10 %
Operating current [A]*	max. 3 A including actuator at max. load and charging current of the optional SAFEPOS energy-pack (charging current approx. 1 A)
Lifelong energy storage SAFEPOS energy-pack	up to 10 years (depending on operating conditions)
Electronic without actuator [W]*	min. 2 W, max. 5 W
Control	
Input analogue:	galvanically isolated from the supply voltage and analog output 0/4...20 mA (input resistance 60 Ω) 0...5/10 V (input resistance 22 kΩ)
Output analogue:	Max. current 10 mA (for voltage output 0...5/10 V) Bürde (Last) 0...560 Ω (for current output 0/4...20 mA)
Output digital:	current limit 100 mA
Input digital:	0...5 V = log „0“, 10...30 V = log „1“ inverted input reversed accordingly
Communication interface:	Connection to PC via USB büS interface set
Communication Software:	Bürkert communicator



Electrical control and interface

The position of the actuator is regulated according to the set-point position value. The set-point position value is specified either by an external standard signal (analog) or via a field bus (digital).

Analogue Control

For analogue control 2 variants are available for the inputs and outputs and the connection interface

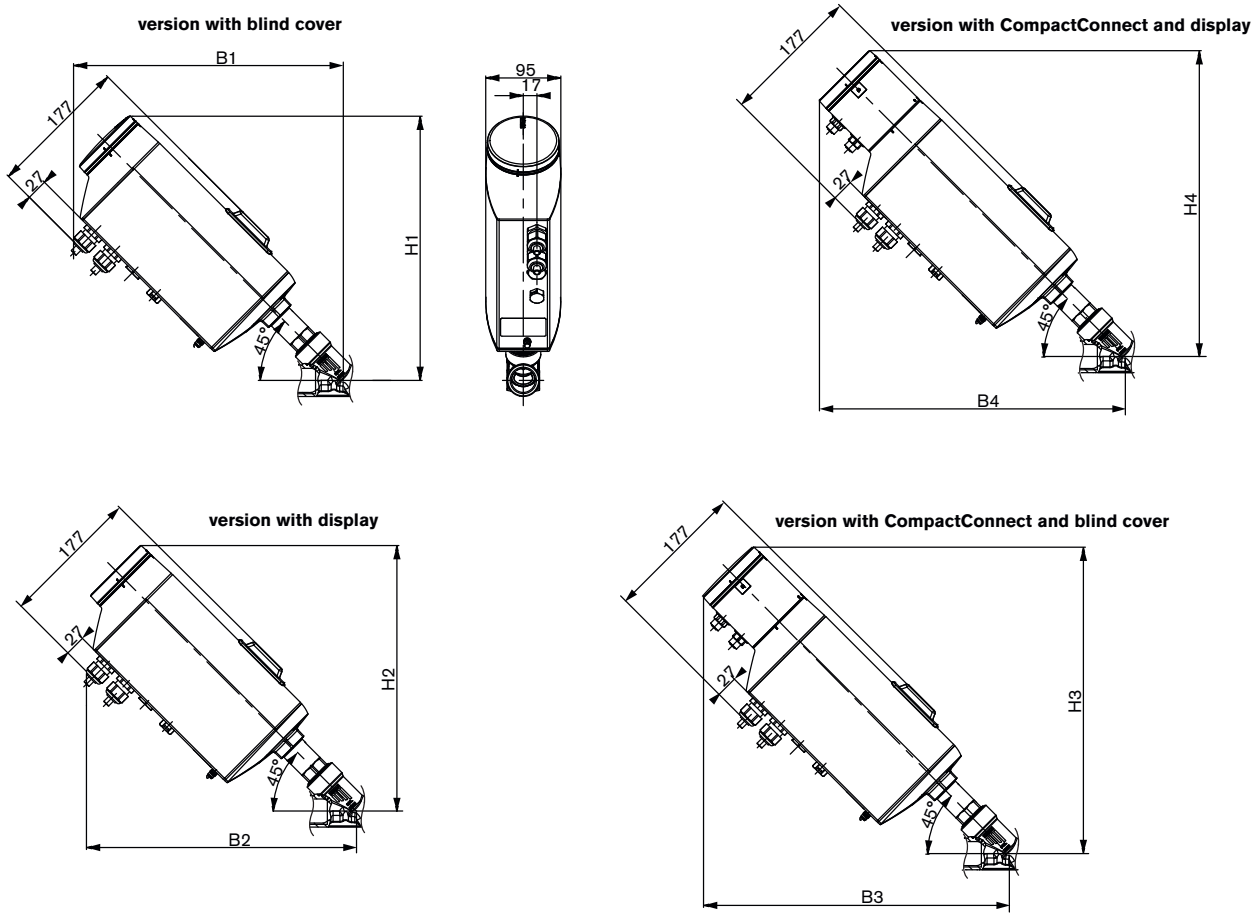
Input and output:
* 1 analogue input, 1 binary input
* 1 analogue input, 1 binary input, 1 analogue output, 2 binary output (option)

Interface:
* cable gland with connection terminal
* M12 circular connectors M12 (option)

Fieldbus: EtherNet/IP, PROFINET, Modbus TCP (option)

The Fieldbus Gateway for EtherNet / IP, PROFINET and Modbus TCP is integrated into a special module. It has 2 fieldbus connections with 4-pin M12 circular connectors. Under the gateway housing cover are the interfaces for the fieldbus connection and status LEDs. If there is a need to be include it in a network then the configuration of the Ethernet can be performed via the web server.

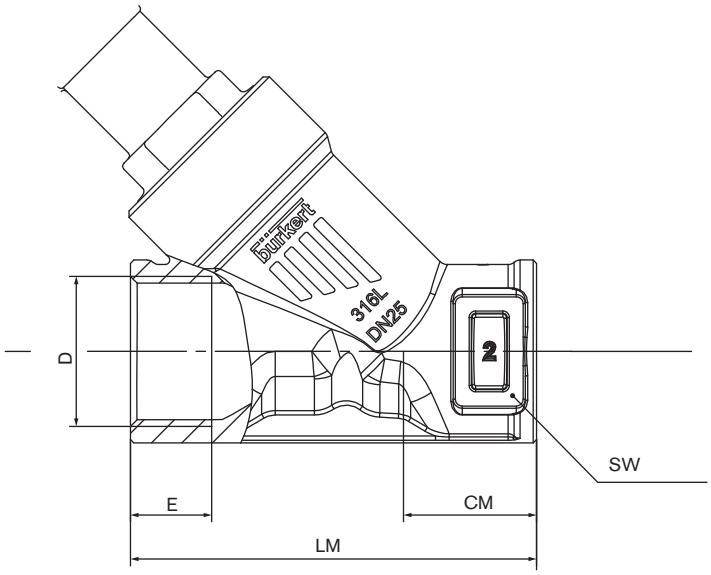
Dimensions [mm] - valve type 3360 and valve system



Port connection	Height [mm]				Width [mm]			
[mm]	H1	H2	H3	H4	B1	B2	B3	B4
15	306	308	359	359	314	314	359	359
20	314	316	367	367	321	321	367	367
25	333	336	387	387	341	341	387	387
32	347	349	400	400	354	354	400	400
40	349	351	402	402	356	356	402	402
50	362	364	416	416	370	370	416	416

Dimensions [mm] - body valve type 3360

Threaded connection

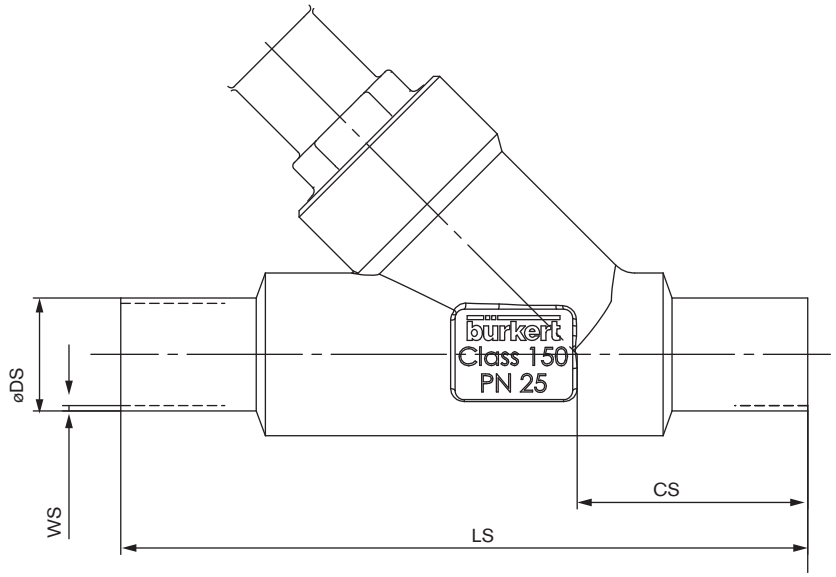


G, RC, NPT (EN ISO 228-1, ISO 7/1 /DIN EN 10226-2, ASME B 1.20.1)

Port size [mm]	CM [mm]	LM [mm]	SW [mm]	G		NPT		RC	
				D [mm]	E [mm]	D [mm]	E [mm]	D [mm]	E [mm]
15	24	65	27	G 1/2	14	NPT 1/2	13.7	RC 1/2	13.2
20	27	75	34	G 3/4	16	NPT 3/4	14.0	RC 3/4	14.5
25	29.5	90	41	G 1	18	NPT 1	16.8	RC 1	16.8
32	36	110	50	G 1 1/4	16	NPT 1 1/4	17.3	RC 1 1/4	19.1
40	35	120	55	G 1 1/2	18	NPT 1 1/2	17.3	RC 1 1/2	19.1
50	45	150	70	G 2	24	NPT 2	17.6	RC 2	23.4

Dimensions [mm] - body valve type 3360

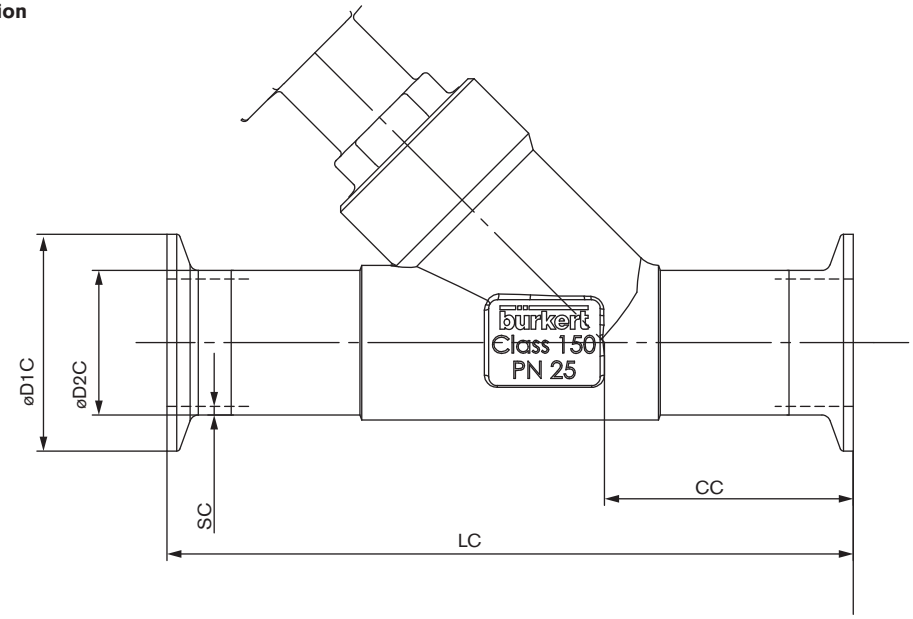
Weld ends port connection



Port size	EN ISO 1127 Series 1 ISO 4200 DIN 11866 Series B				DIN 11850 R2 DIN 11866 Series A DIN EN 10357 Series A				ASME BPE DIN 11866 Series C			
	CS	LS	ØDS	WS	CS	LS	ØDS	WS	CS	LS	ØDS	WS
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
15	34	100	21.3	1.6	34	100	19	1.5	34	100	12.7	1.65
20	39	115	26.9	2.0	39	115	23	1.5	39	115	19.05	1.65
25	43	130	33.7	2.0	43	130	29	1.5	43	130	25.4	1.65
32	40	145	42.4	2.0	40	145	35	1.5	-	-	-	-
40	49	160	48.3	2.0	49	160	41	1.5	49	160	38.1	1.65
50	50	175	60.3	2.6	50	175	53	1.5	50	175	50.8	1.65

Dimensions [mm] - body valve type 3360

Clamp connection



Port size	Clamp: DIN 32676 Series B Tube: EN ISO 1127 Series 1 ISO 4200 DIN 11866 Series B					Clamp: ASME BPE DIN 32676 Series C Tube: ASME BPE DIN 11866 Series C					Clamp: BS 4825-3 Tube: BS 4825-1					Clamp: DIN 32676 Series A Tube: DIN 11850 Series 2 DIN 11866 Series A DIN EN 10357 Series A				
	LC	CC	ØDC1	ØDC2	SC	LC	CC	ØDC1	ØDC2	SC	LC	CC	ØDC1	ØDC2	SC	LC	CC	ØDC1	ØDC2	SC
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
15	156	49.0	50,5	21.3	1.6	130	49.0	25.0	12.7	1.65	130	49.0	25.0	12.7	1.20	130	49.5	19	34.0	1.5
20	150	56.5	50.5	26.9	1.6	150	56.5	25.0	19.05	1.65	150	56.5	25.0	19.05	1.20	150	57.0	23	34.0	1.5
25	160	58.0	50.5	33.7	2.0	160	58.0	50.5	25.4	1.65	160	58.0	50.5	25.4	1.65	160	58.5	29	50.5	1.5
32	200	57.5	50.5	42.4	2.0	-	-	-	-	-	-	-	-	-	-	180	58.0	35	50.5	1.5
40	200	69.0	64.0	48.3	2.0	200	69.0	50.5	38.1	1.65	200	69.0	50.5	38.1	1.65	200	69.5	41	50.5	1.5
50	230	77.5	77.5	60.3	2.6	230	77.5	64.0	50.8	1.65	230	77.5	64.0	50.8	1.65	230	78.0	53	64.0	1.5

bürkert
FLUID CONTROL SYSTEMS

Electromotive process valve - 2-way globe control valve

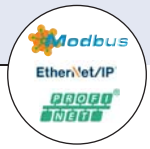
- high precise and fast flow control
- several Kvs value per port size due to removable trim kit
- weather, impact and vibration resistant design
- easy cleaning by its design according hygienic demands
- many diagnostic functions by monitoring of valve and operation data

Options

Touch Display

SAFEPOS
energy-pack

Type 3360
for highest control accuracy



Fieldbus

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The innovative process controller Bürkert valve Type 3361 is the solution when it comes to demanding control tasks and operating conditions. The electromotive actuator with ball screw positions the control cone with highest precision. A unique feature is its high positioning speed of 6 mm/s, that reacts quasi delay-free to process signals, and can be varied according to customer demands. Pressure variations or shocks in the medium aren´t transferred to the valve position. Each flow optimized valve housing can be equipped with up to 5 different valve seats for a precise adaptation according to customer needs. If necessary, the safety position can be approached by an optional energy storage in case of power failure. Actuator and valve are adapted perfectly to each other with closed design and robust surface. This ensures the hygienic requirements of a fast and residue-free cleaning. Harsh environment are no problem for the Type 3361 because of the protection class IP65 / IP67 and its high impact and vibration resistance. Unrivalled cycle life and sealing integrity is guaranteed by the proven self adjusting spindle packing with exchangeable V-seals. The fieldbus suitable Type 3361 provides many helpful functions for process monitoring, valve diagnostics and predictive maintenance and thus offers the decisive advantage of a modern process automation.

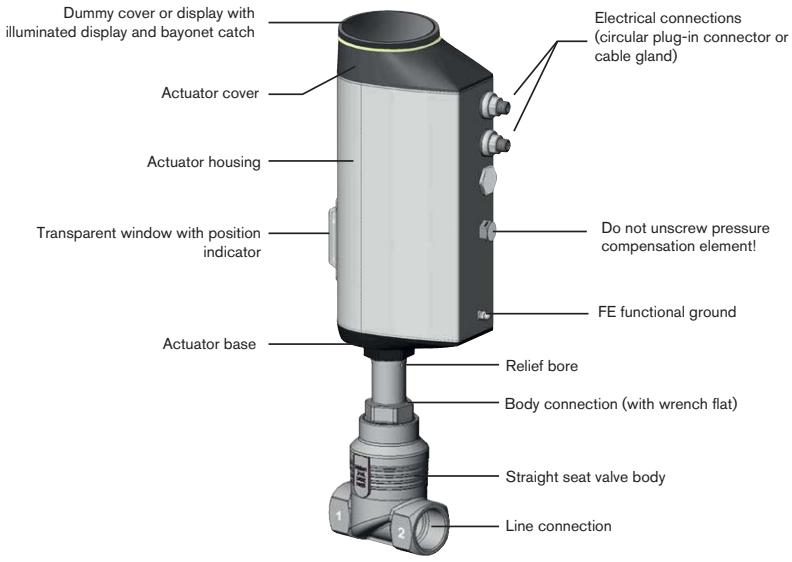
Technical data	
Kvs-Werte	0.4 … 37 m³/h
Port and seat size	DN 10 ... DN 50 / DN 3 … DN 50
Operating pressure	16 bar / 1600 kPa / 232 psi
Port connections	
▪ Flange	▪ DIN EN 1092-1, ANSI B 16.5, JIS 10K
▪ Thread	▪ G, RC, NPT (EN ISO 228-1, ISO 7/1 /DIN EN 10226-2, ASME B 1.20.1)
▪ Weld ends	▪ EN ISO 1127 / ISO 4200, DIN 11850 R2, ASME BPE, BS 4825-1, SMS 3008
▪ Clamp	▪ ISO 2852, DIN 32676, ASME BPE, BS 4825
Medium	Neutral Gas, water, alcohol, oil, fuels, hydraulic mediums, salt solution, alkali solutions, organic solvents, steam
Viscosity	max. 600 mm²/s
Media temperature	-10...+185 °C (seat sealing steel/steel) -10...+185 °C (seat sealing PEEK/steel) -10...+130 °C (seat sealing PTFE/steel)
Ambient temperature	-25 °C … +65 °C (without touch display) -25 °C … +60 °C (with touch display) -25 °C … +55 °C (with SAFEPOS energy storage) Note: Derating see temperature chart
Seat leakage according to IEC 534-4/EN 1349	Shut-off class III and IV for steel/steel Shut-off class VI for PTFE/steel and PEEK/steel
Safety position at power failure	with SAFEPOS energy-pack: opened, closed or free programmable without SAFEPOS energy-pack: blocked in last position
Power supply	24 V DC +/- 10% (max. residual ripple 10%)
Closing time (100% stroke)	3.3 ... 4.5 s (je nach Hub)
Travel speed	6 mm/s
Duty cycle	100%
Protection class	IP65 / IP67
Analogue control	Setpoint: 0-20 mA, 4-20 mA, 0-5 V, 0-10 V actual value optional
Digital control (fieldbus)	EtherNet/IP, Modbus/TCP, Profinet
Approval and Conformity	FDA, EGV 1935/2004

Structure and function

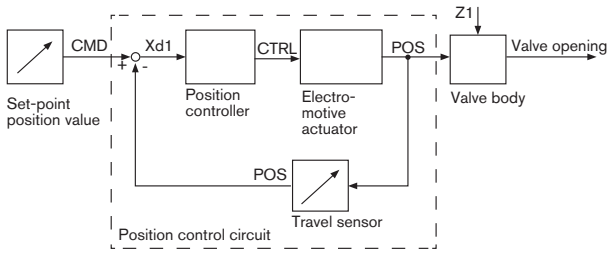
The electromotive linear actuator consists of a brushless direct current motor, gears and a threaded spindle. The valve spindle, which is connected to the threaded spindle, transfers the force to the control cone. The electronic control system of the position controller is actuated either via standard signals (analog) or via a field bus (digital). Optionally there is the energy pack (SAFEPOS energy-pack) for the device. If the supply voltage fails, the energy pack supplies the actuator with the required energy to move the valves into the required position which can be adjusted via a menu.

The valve position can be manually changed in 2 ways. Either over an electrical manual control or over mechanical manual control, if no supply voltage applied. The device can be set and operated either via 2 capacitive buttons and 4 DIP switches or optionally on a display with touch-screen. There is also the option of setting the device via the büs Service interfache and by using the PC software "Bürkert-Communicator".

The intelligent process valve Type 3360 offers the operator options for process monitoring, valve diagnostics and predictive maintenance. Internal measurements for the operating state are evaluated and, if issued as a warning or error message. This signal, for example, undue environmental and process conditions, functional deviations of components or the state of the energy accumulator. Internal measurements for operating state are evaluated and, possible a warning or error message is issued. This signal indicates, for example, bad environmental and process conditions, functional deviations of components or the state of the energy accumulator. A special feature of the globe control valve is the screwed valve seat which can be replaced to reduce the nominal diameter.

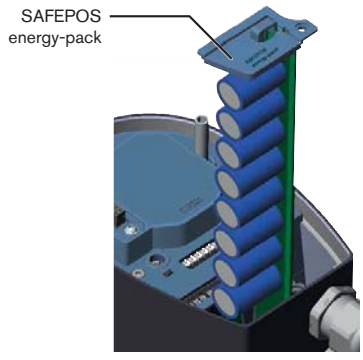


Structure, electromotive straight seat control valve Type 3361



Integrated position controller

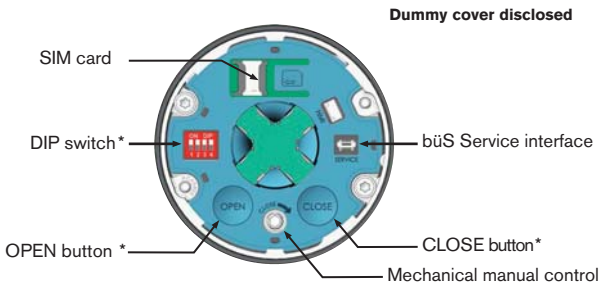
The position of the actuator (stroke) is regulated according to the set-point position value. The set-point position value is specified either by an external standard signal (analog) or via a field bus (digital). The travel sensor records the actual position (POS) of the electric linear actuator. The position controller compares this actual position value with the set-point position value (CMD) which is defined as standard signal. If there is a control difference (Xd1), the electromotive actuator is controlled via the CTRL variable and the actual position value is changed accordingly.



Safety position with energy storage (Option)

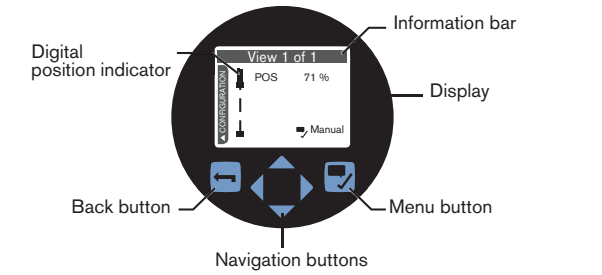
The safety starting positions in case of power interruption is realized with the optional energy storage SAFEPOS energy-pack. The desired position is adjusted from the menu. Here any intermediate position can be defined in addition to the end positions (NO / NC). The energy storage has a lifespan of up to 10 years, depending on the operating conditions. The power of the energy storage is monitored and a warning is displayed to indicate its life is coming to an end. The memory is designed as a plug-in module making it easy to exchange. Without energy storage, the valve remains in the last position.

Controls and indicators



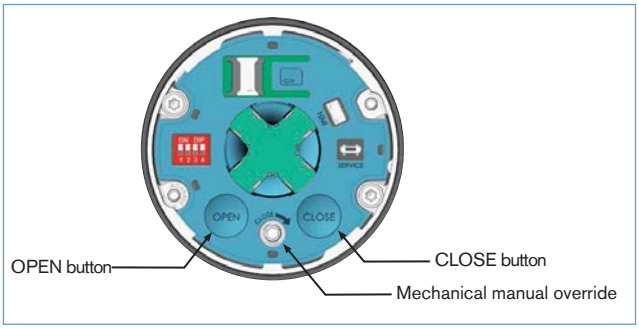
Devices without display module

In the version without control display the basic functions are operated by 4 DIP switches and 2 pushbuttons. These are located under the dummy cover which can be removed manual by turning. Through the büS service access, the device can also be configured in detail with the Bürkert communicator software. For this, the optional USB-büS interface kit is required.



Robust display with control buttons (optional)

The robust display module is easy to use, it configurates and displays all the required functions. In addition to the start screen you can also switch to the configuration view and user-specified views as needed. All functions of the device without display module like büS-Service interface are available too.

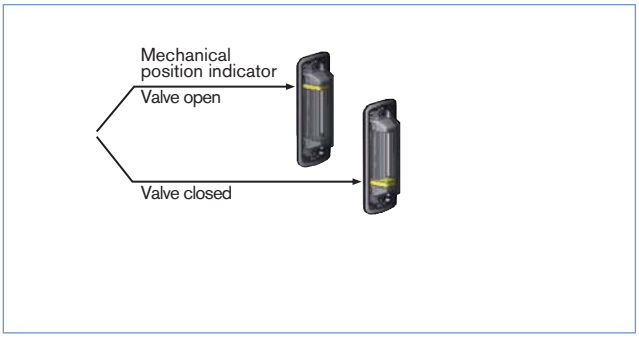


Manual and electrical operation

The manual override for mechanical operation of the valve is located under the dummy cover or the display module.
Electrical manual override for the procedure is carried out directly on the touch screen, or in the version without a display by two buttons below the dummy cover.

360°- LED Illuminated ring

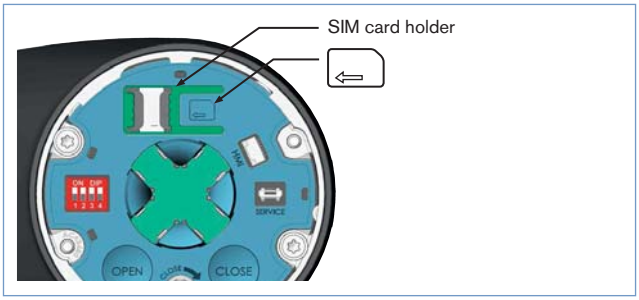
To display the device status, the valve timing and the operating condition a visible 360° LED illuminated ring is mounted around the dummy cover or the display module. The LED ring lights up, flashes or flashes in one or different colors. Depending on customer requirements 4 different LED modes can be selected (Namur mode, valve mode without warnings, valve mode with warnings, LED off)



Mechanical position indicator

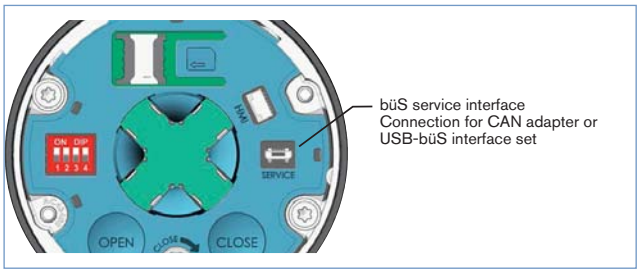
The mechanical position indicator also indicates when the supply voltage of the current valve position fails

Controls and indicators, continued



SIM card as data storage (option)

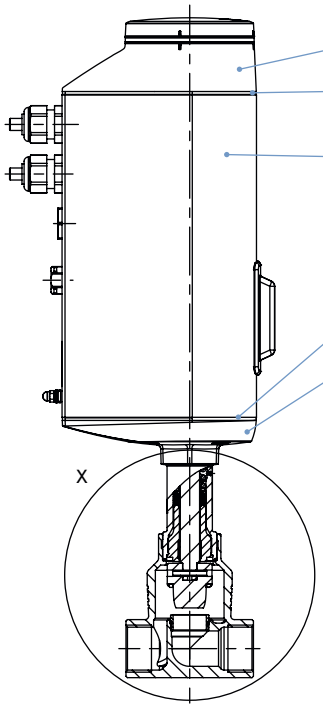
With the SIM card optional device-specific values and user settings can be saved and quickly transferred to another device.



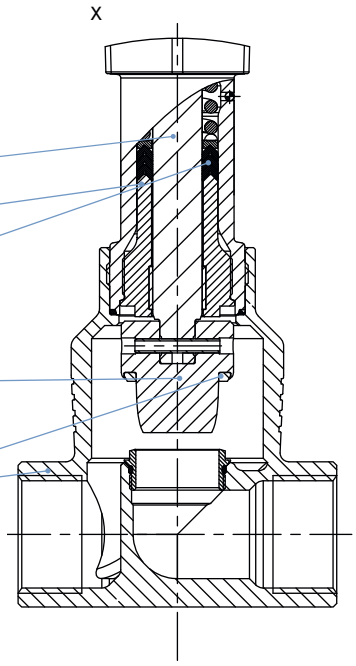
büS service interface

The büS service interface connects the device to the communicator software on a PC, laptop or smartphone. From there, a configuration of the device or failure diagnosis can be performed.

Design and materials view



Actuator top part:	PPS
Sealing:	EPDM
Actuator housing:	Aluminium powder-coated
Sealing:	EPDM
Actuator bottom part:	PPS



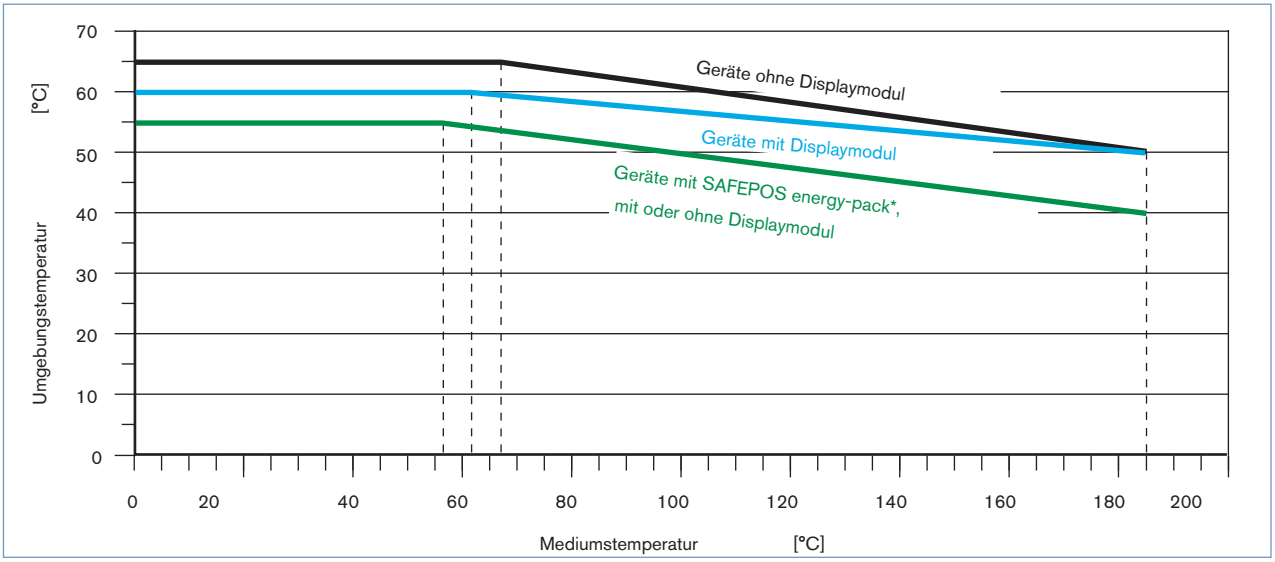
Spindle:	Stainless steel 1.4401 (316) /1.4404 (316L)
Spindle guidance:	Stainless steel 1.4404 / 316L
Spindle packing:	PTFE V-seals with spring compensation
Control cone:	Stainless steel 1.4571
Control cone seal:	Stainless steel 1.4571 / PTFE or PEEK disc for soft seat sealing
Valve body:	Stainless steel 316 L

Note: The globe control valve **Type 3361** could be delivered with miscellaneous port connection (thread, weld ends and clamp), there are not be represented in the picture, but are made with same material as the valve body.

Technical data

Temperature chart

The maximum allowable ambient temperature and media temperature influence each other. The maximum allowable temperature curves of different device variants can be seen in the temperature chart.

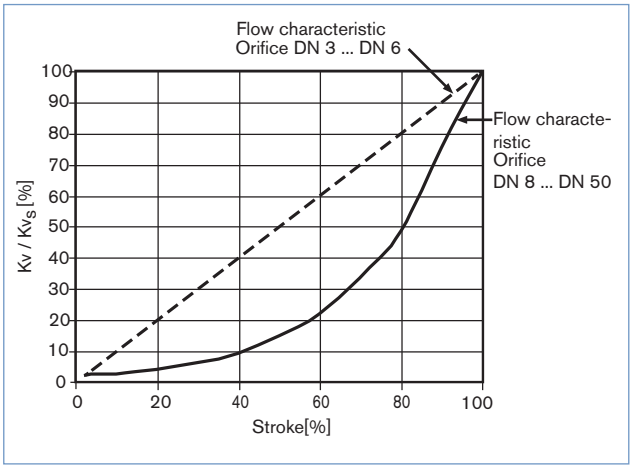


Flow characteristic

The straight seat control valve shows different characteristics depending on the orifice.

- Equal percentage of parabolic cone for valve seats with orifice DN 8... DN 50
- Linear cone for valve seats of the orifice DN 4 and DN 6, flow characteristic according to DIN / IEC 534-2-4
- Theoretical setting ratio (KvS: Kv0)

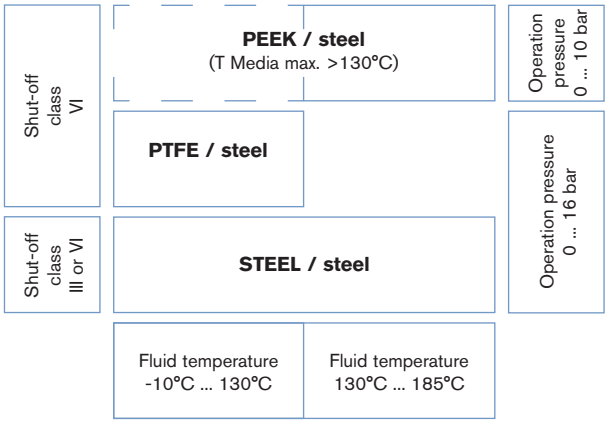
  Orifice DN 8...DN 50: 50: 1
  Orifice DN 6: 25: 1
  Orifice DN 4: 10: 1
- KvR value[9] at 5 % of the stroke for DN > 10 mm
  KvR value at 10 % of the stroke for DN ≤ 10 mm



Selection chart for seat sealing

Seat sealing type steel / steel is recommended for shut-off class III and IV.

Seat sealing with PTFE is used for shut-off class VI, if fluid temperature is <130 °C. If the maximum fluid temperature exceeds 130°C temporarily or permanently, then PEEK is used for seat sealing.



[9] KvR value= the smallest KV value at which the angularity tolerance according to DIN / IEC 534-2-4 can still be maintained.

Technical data, continued

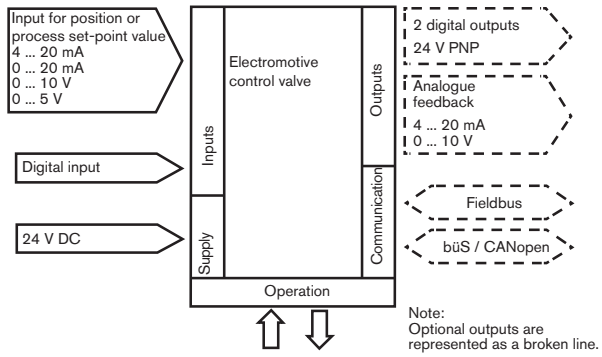
Flow below seat

Port connection (tube)		Seat size		Operating pressure seal/ conical seat			Leakage class seal / conical seat		Kv value with stroke [m³/h]						Kvs value
[mm]	[inch]	[mm]	[inch]	stainless steel/ stainless steel [bar]	PTFE/ stainless steel [bar]	PEEK/ stainless steel [bar]	stainless steel/ stainless steel	PTFE o. PEEK/ stainless steel	5%	10%	30%	50%	70%	90%	[m3/h]
10	3/8	3	0.12	16	-	-	IV	-	0.001	0.003	0.015	0.037	0.065	0.090	0.1
		4[1]	0.16						0.00	0.02	0.10	0.19	0.27	0..33	0.35
		4	0.16						0.04	0.05	0.16	0.27	0.36	0.44	0.5
		6[2]	0.24						0.05	0.12	0.48	0.76	0.98	1.13	1.2
		6[3]	0.24						0.01	0.007	0.045	0.16	0.41	1.08	1.25
		8	0.31						0.06	0.07	0.12	0.26	0.61	1.50	2.0
		10	0.39						0.09	0.11	0.19	0.48	1.00	2.30	2.7
15	1/2	3	0.12	16	-	-	IV	-	0.001	0.003	0.015	0.037	0.065	0.090	0.1
		4[1]	0.16						0.005	0.015	0.100	0.190	0.265	0.325	0.35
		4	0.16						0.04	0.05	0.16	0.27	0.36	0.44	0.5
		6[2]	0.24						0.05	0.12	0.48	0.76	0.98	1.13	1.1
		6[3]	0.24						0.005	0.007	0.045	0.160	0.410	1.080	1.25
		8	0.31						0.07	0.08	0.13	0.27	0.63	1.60	2.1
		10	0.39						0.09	0.11	0.19	0.49	1.10	2.50	3.1
		15	0.59						0.14	0.17	0.35	0.80	1.80	3.70	4.3
20	3/4	10	0.39	16	-	-	IV	-	0.11	0.12	0.20	0.52	1.20	2.60	3.2
		15	0.29						0.14	0.17	0.35	0.80	1.80	4.00	5.2
		20	0.79	16	16	10	IV	VI	0.20	0.25	0.45	1.10	2.40	5.20	7.1
25	1	15	0.29	16	-	-	IV	-	0.14	0.17	0.35	0.80	1.80	4.10	5.3
		20	0.79	16	16	10	IV	VI	0.2	0.25	0.47	1.10	2.50	5.40	7.2
		25	0.98						0.35	0.38	1.00	2.20	5.10	9.40	12.0
32	1 1/4	20	0.79	16	16	10	IV	VI	0.22	0.25	0.50	1.10	2.50	5.80	8.0
		25	0.98						0.40	0.47	1.10	2.50	5.40	10.3	13.0
		32	1.3						0.48	0.60	1.30	3.10	6.80	14.0	17.8
40	1 1/2	25	0.98	16	16	10	IV	VI	0.40	0.50	1.10	2.60	5.60	10.7	13.6
		32	1.3						0.48	0.60	1.30	3.20	6.90	15.0	20.2
		40	1.6	10	10	6	III	VI	0.60	0.70	1.70	4.00	9.20	18.2	23.8
50	2	32	1.3	16	16	10	IV	VI	0.48	0.60	1.30	3.20	6.90	16.0	21.0
		40	1.6	10	10	6	III	VI	0.60	0.70	1.70	4.00	9.20	18.9	24.6
		50	2.0	6	6	-	III	VI / -	0.90	1.10	2.90	6.80	15.5	29.3	37.0

[1] low flow
[2] linear
[3] equal percentage

Electrical control

Electrical data	
Protection class	3 acc. to DIN EN 61140
Electrical connections	Cable gland, 2 x M20 or 2 circular plug-in connector M12, 5-pin and 8-pin
Operating voltage	24 V DC ± 10 % max. residual ripple 10 %
Operating current [A]*	max. 3 A including actuator at max. load and charging current of the optional SAFEPOS energy-pack (charging current approx. 1 A)
Lifelong energy storage SAFEPOS energy-pack	up to 10 years (depending on operating conditions)
Electronic without actuator [W]*	min. 2 W, max. 5 W
Control	
Input analogue:	galvanically isolated from the supply voltage and analog output 0/4...20 mA (input resistance 60 Ω) 0...5/10 V (input resistance 22 kΩ)
Output analogue:	Max. current 10 mA (for voltage output 0...5/10 V) Bürde (Last) 0...560 Ω (for current output 0/4...20 mA)
Output digital:	current limit 100 mA
Input digital:	0...5 V = log „0“, 10...30 V = log „1“ inverted input reversed accordingly
Communication interface:	Connection to PC via USB büS interface set
Communication Software:	Bürkert communicator



Electrical control and interface

The position of the actuator is regulated according to the set-point position value. The set-point position value is specified either by an external standard signal (analog) or via a field bus (digital).

Analogue Control

For analogue control 2 variants are available for the inputs and outputs and the connection interface

Input and output:
* 1 analogue input, 1 binary input
* 1 analogue input, 1 binary input, 1 analogue output, 2 binary output (option)

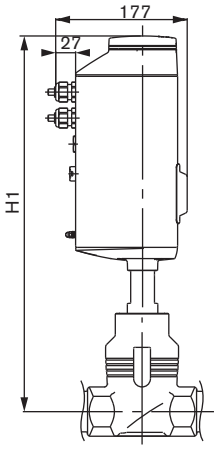
Interface:
* cable gland with connection terminal
* M12 circular connectors M12 (option)

Fieldbus: EtherNet/IP, PROFINET, Modbus TCP (option)

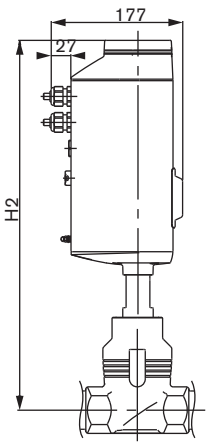
The Fieldbus Gateway for EtherNet / IP, PROFINET and Modbus TCP is integrated into a special module. It has 2 fieldbus connections with 4-pin M12 circular connectors. Under the gateway housing cover are the interfaces for the fieldbus connection and status LEDs. If there is a need to be include it in a network then the configuration of the Ethernet can be performed via the web server.

Dimensions [mm] - valve Type 3361 and valve system

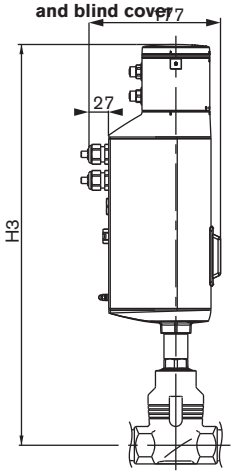
Version with blind cover



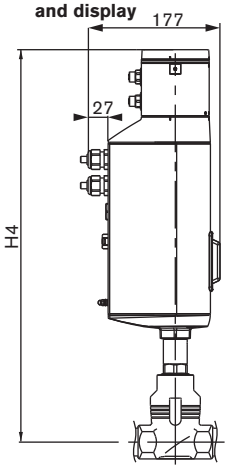
Version with Display



Version with CompactConnect and blind cover

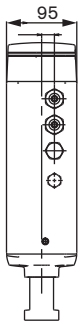


Version with CompactConnect and display



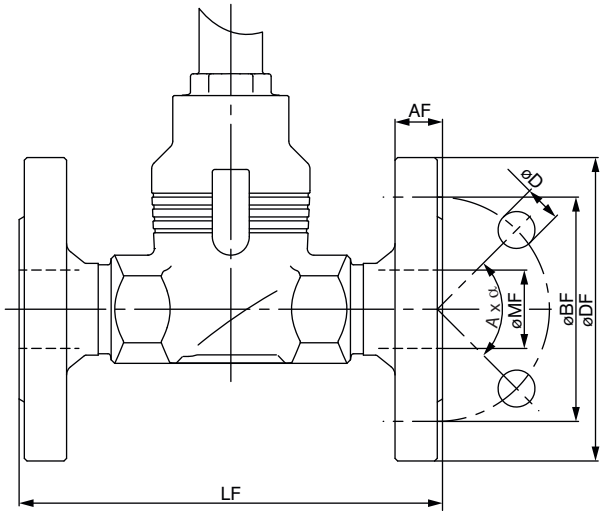
Port size	Height [mm]			
[mm]	H1	H2	H3	H4
10	417	417	489	489
15	417	417	489	489
20	423	423	496	496
25	446	446	518	518
32	474	474	546	546
40	479	479	551	551
50	485	485	557	557

Side view



Dimensions [mm] - valve body of Type 3361

Flange connection



DIN EN 1092, JIS 10K

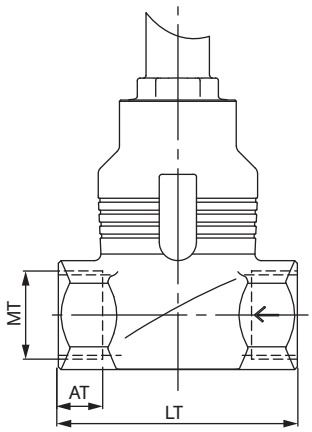
Port size (tube)	DIN EN 1092 FTF series 1 acc. to DIN EN 558-1						JIS 10K FTF series 10 acc. to DIN EN 558-2					
[mm]	ø DF	LF	ø BF	AF	ø D	ø MF	ø DF	LF	ø BF	AF	ø D	ø MF
10	90	130	60	16	14	13.6	–	–	–	–	–	–
15	95	130	65	16	14	18.1	95	108	70	12	15	18.1
20	105	150	75	18	14	23.7	100	117	75	14	15	23.7
25	115	160	85	18	14	29.7	125	127	90	14	19	29.7
32	140	180	100	18	18	38.4	135	140	100	16	19	38.4
40	150	200	110	18	18	44.3	140	165	105	16	19	44.3
50	165	230	125	20	18	56.3	155	203	120	16	19	56.3

ANSI B 16.5

Port size (tube)	ANSI B 16.5 Class 150 FTF series 37 acc. to DIN EN 558-2					
[inch]	ø DF	LF	ø BF	AF	ø D	ø MF
1/2	89	184	60.5	11.2	15.7	15.7
3/4	99	184	69.9	12.7	15.7	20.8
1	108	184	79.2	14.2	15.7	26.7
1 1/2	127	222	98.6	17.5	15.7	40.9
2	152	254	120.7	19.1	19.1	52.6

Dimensions [mm] - valve body of Type 3361

Threaded connection

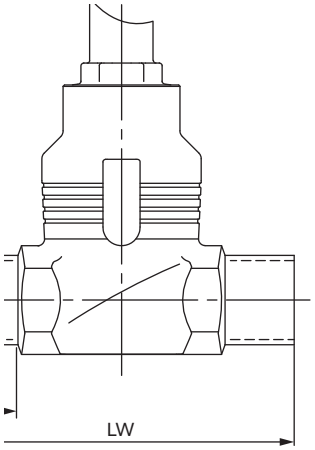


G, RC, NPT (EN ISO 228-1, ISO 7/1 /DIN EN 10226-2, ASME B 1.20.1)

Port size (tube)	MT G / NPT / RC	LT	AT		
[mm]	[inch]		G	NPT	Rc
10	3/8	65	12	10.3	10.1
15	1/2	65	14	13.7	13.2
20	3/4	75	16	14	14.5
25	1	90	18	16.8	16.8
32	1 1/4	110	20	17.3	19.1
40	1 1/2	120	22	17.3	19.1
50	2	150	24	17.6	23.4

Dimensions [mm] - valve body of Type 3361

Weld end connection



EN ISO 1127 series 1/ISO 4200/DIN 11866 series B, DIN 11850 series 2/DIN 11866 series A/DIN EN 10357 series A

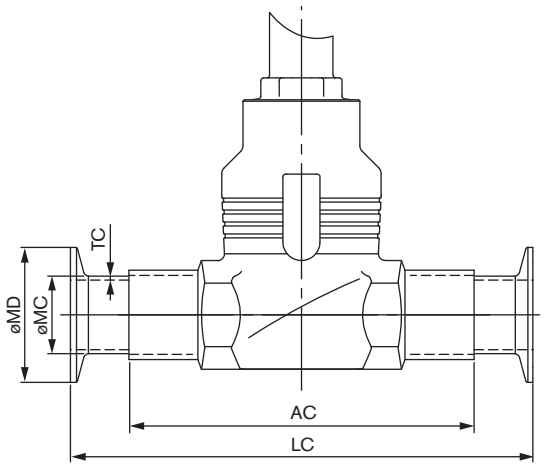
Port size (tube) [mm]	AW	LW	EN ISO 1127 series 1/ ISO 4200/DIN 11866 series B		DIN 11850 series 2/DIN 11866 series A/DIN EN 10357 series A	
			ø MW	TW	ø MW	TW
10	20	90	17.2	1.6	13	1.5
15	20	90	21.3	1.6	19	1.5
20	20	100	26.9	1.6	23	1.5
25	26	130	33.7	2.0	29	1.5
32	26	140	42.4	2.0	35	1.5
40	26	150	48.3	2.0	41	1.5
50	26	175	60.3	2.0	53	1.5

BS4825 Part 1, ASME BPE/DIN 11866 series C

Port size (tube) [inch]	AW	LW	BS 4825 Part 1		ASME BPE/ DIN 11866 series C	
			ø MW	TW	ø MW	TW
1/2	20	90	12.7	1.2	12.7	1.65
3/4	20	90	19.05	1.2	19.05	1.65
1	20	100	25.4	1.6	25.4	1.65
1 1/2	26	140	38.1	1.6	38.1	1.65
2	26	150	50.8	1.6	50.8	1.65

Dimensions [mm] - valve body of Type 3361

Clamp connection



DIN 32676 series A, ASME BPE/DIN 32676 series C oder BS4825-3

Port size (tube) [mm]	AC	LC	Clamp: DIN 32676 series A, tube: DIN 11850 series 2/ DIN 11866 series A/ DIN EN 10357 series A			Clamp: ASME BPE/ DIN 32676 series C, tube: ASME BPE/ DIN 11866 series C			Clamp: BS4825-3, tube: BS4825-1		
			ø MC	ø MD	TC	ø MC	ø MD	TC	ø MC	ø MD	TC
15	90	126	19	34.0	1.5	12.7	25.0	1.65	12.7	25.0	1.2
20	100	136	23	34.0	1.5	19.05	25.0	1.65	19.05	25.0	1.2
25	10	173	29	50.5	1.5	25.4	50.5	1.65	25.4	50.5	1.65
32	140	179	35	50.5	1.5	-	-	-	-	-	-
40	150	193	41	50.5	1.5	38.1	50.5	1.65	38.1	50.5	1.65
50	175	218	53	64.0	1.5	50.8	64.0	1.65	50.8	64.0	1.65

DIN 32676 series B

Port size (tube) [mm]	AC	LC	Clamp: DIN 32676 series B, tube: EN ISO 1127 series 1/ ISO 4200/DIN 11866 series B		
			ø MC	ø MD	TC
15	90	146	21.3	50.5	1.6
20	100	136	26.9	50.5	1.6
25	130	164	33.7	50.5	2.0
32	140	178	-	-	-
40	150	193	48.3	64.0	2.0
50	175	218	60.3	77.5	2.0