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Севастополь (8692)22-31-93
Симферополь (3652)67-13-56
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Сургут (3462)77-98-35
Сыктывкар (8212)25-95-17
Тамбов (4752)50-40-97
Тверь (4822)63-31-35
Тольятти (8482)63-91-07
Томск (3822)98-41-53
Тула (4872)33-79-87
Тюмень (3452)66-21-18
Улан-Удэ (3012)59-97-51
Ульяновск (8422)24-23-59
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
Чебоксары (8352)28-53-07
Челябинск (351)202-03-61
Череповец (8202)49-02-64
Чита (3022)38-34-83
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ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ НА ШАРОВЫЕ КРАНЫ VBG60

ACVATIX™

Open/close ball valves 2-port and changeover ball valves 3-port, PN40 with externally threaded connections

VAG60.. VBG60..T

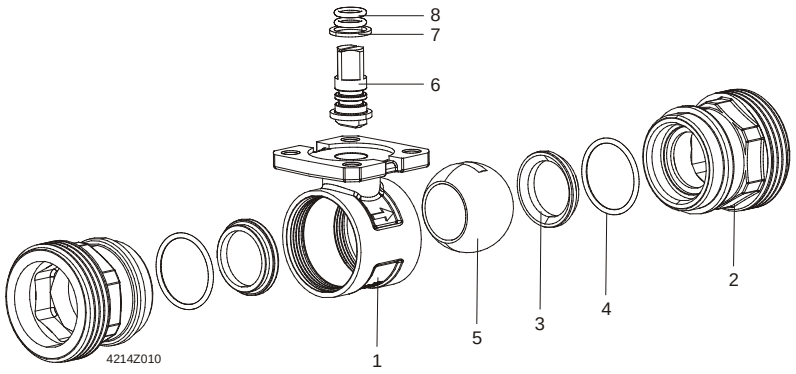
For use in heating, ventilating and air conditioning plants as open/close or changeover ball valve. For closed circuits.

- Brass CW602N (DZR) ball valve body
- DN 15...50
- k_{vs} 8…96 m^3/h
- Flat sealing connections with external thread G..B to ISO 228-1
- Sets of ALG.. with threaded connection
- Angle of rotation 90°
- For use with rotary actuators GQD..9A, GMA..9E with spring-return and GSD..9A, GLB..9E without spring return
- Applications with auxiliary functions (e.g., switch, potentiometer) can also be combined with standard rotary actuators belonging to the DAC range.

Features

- Less-expensive:
  Optimized to the maximum flow rate for each nominal size. Permits the use of smaller, less-expensive valves. Low torque thanks to O-Ring protective sleeves and well-designed construction. Permits motorization using smaller, less-expensive actuators.
- Higher product life expectancy:
  Service-free maintenance, also thanks to the friction-optimized spindle and the ball made of DZR brass, chrome, and polished.
- Simplest assembly:
  The actuators are pre-mounted on the ball valve consoles. 100% assembly without tools and no parts to lose.

Technical design

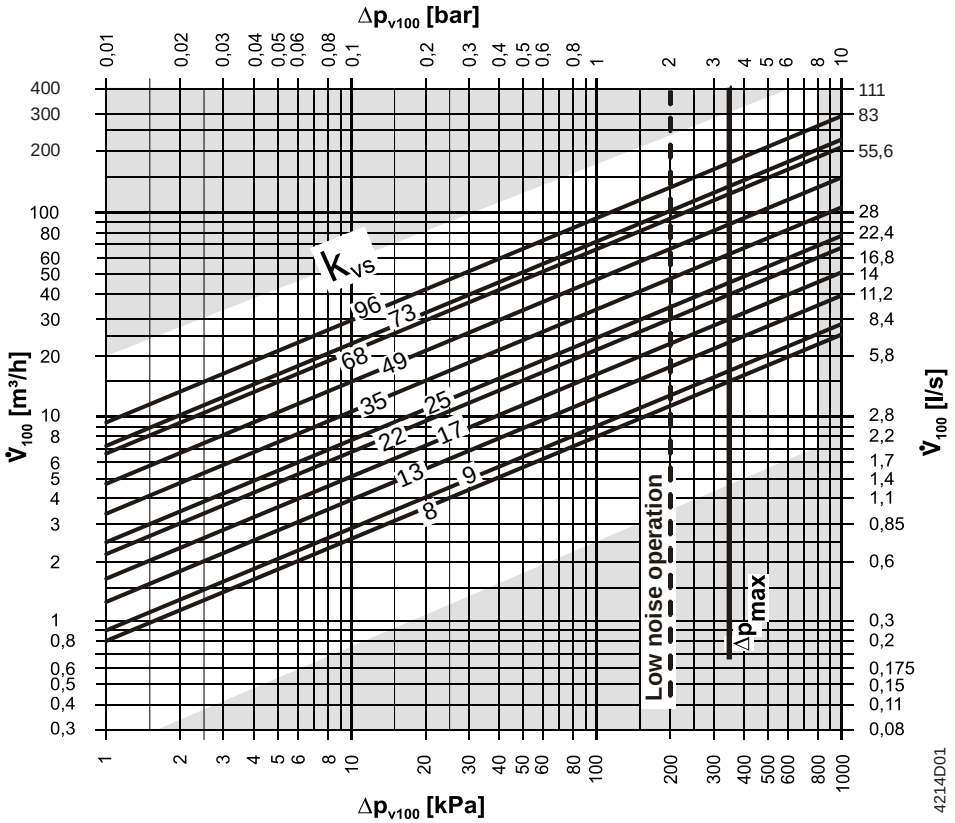


Parts

1 Body
2 Connection with external thread
3 Seat
4 O-ring
5 Ball
6 Stem
7 Antifriction washer
8 O-ring

Sizing

Flow diagram



----- Δp_{max} for VAG60.. und VBG60.., see table equipment combinations for details

Δp_{max} = maximum permissible differential pressure across the ball valve, valid for the entire actuating range of the motorized ball valve; for low noise operation, we recommend a maximum permissible differential pressure of 200 kPa

Δp_{v100} = differential pressure across the fully open ball valve and the ball valve's control path at a volumetric flow V_{100}

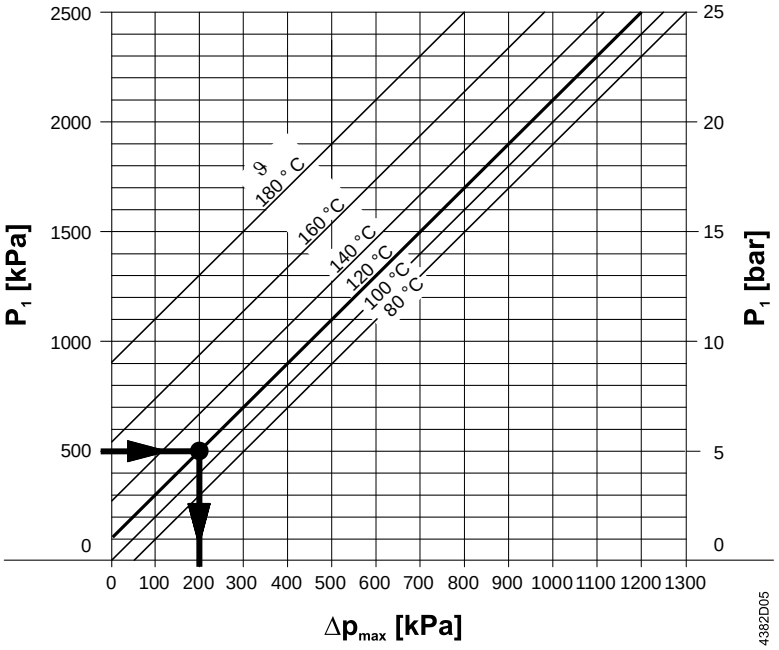
$\dot{V}_{100}$ = volumetric flow through the fully open ball valve

100 kPa = 1 bar ≈ 10 mWS

1 m^3/h = 0,278 l/s water at 20 °C

Cavitation

Cavitation accelerates wear on the ball and seat, and also results in undesirable noise. Cavitation can be avoided by not exceeding the differential pressure shown in the flow diagram on page 2, and by adhering to the static pressures shown below.



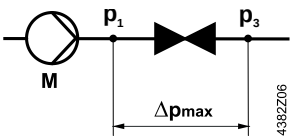
Δp_{max} = differential pressure with ball valve almost closed at which cavitation can largely be avoided

p_1 = static pressure at ball valve inlet

P_3 = static pressure at ball valve outlet

M = pump

ϑ = water temperature



High temperature hot water example

Pressure p1 at ball valve inlet: 500 kPa (5 bar)

Water temperature: 120 °C

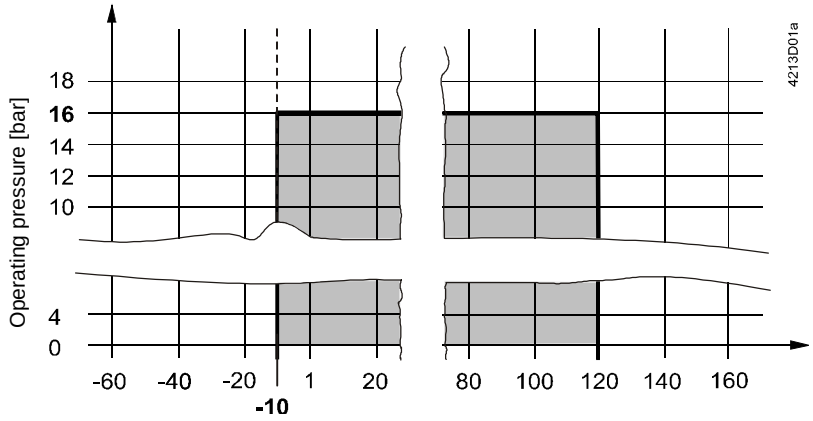
From the diagram above, it will be seen that with the ball valve almost closed, the maximum permissible differential pressure Δp_{max} is 200 kPa (2 bar).

Note on chilled water

To avoid cavitation in chilled water circuits, ensure sufficient counter-pressure at the ball valve's outlet, e.g. with an additional throttling ball valve downstream from the ball valve. Select the maximum differential pressure across the ball valve according to the 80 °C curve in the flow diagram above.

Operating pressure and temperature

Mediums



Operating temperature [°C]

Operating pressure and medium temperature as per IS0 7005

Current local legislation must be observed.

Type summary

Type				DN	k_{vs}
Open/close ball valves 2-port	**Stock no.**	**Changeover ball valves 3-port**	**Stock no.**		
–	–	VBG60.15-8T	S55230-V136	15	8
VAG60.15-9	S55230-V130	–	–		9
–	–	VBG60.20-13T	S55230-V137	20	13
VAG60.20-17	S55230-V131	–	–		17
–	–	VBG60.25-13T	S55230-V138	25	13
VAG60.25-22	S55230-V132	–	–		22
–	–	VBG60.32-25T	S55230-V139	32	25
VAG60.32-35	S55230-V133	–	–		35
–	–	VBG60.40-49T	S55230-V140	40	49
VAG60.40-68	S55230-V134	–	–		68
–	–	VBG60.50-73T	S55230-V141	50	73
VAG60.50-96	S55230-V135	–	–		96

DN = nominal size

k_{vs} = nominal flow rate of cold water (5…30 °C) through the fully open ball valve at a differential pressure of 100 kPa (1 bar)

Accessories

Screwed fittings

Type	Stock no.	Description
ALG..2	ALG..2	Set of 2 screwed fittings, pipe side threaded for 2-port valves, consisting of 2 union nuts, 2 discs and 2 flat seals ALG..2B are brass fittings, for media temperature up to 100 °C.
ALG..2B	S55846-Z1..	
ALG..3	ALG..3	Set of 3 screwed fittings, pipe side threaded for 3-port valves, consisting of 3 union nuts, 3 discs and 3 flat seals ALG..2B are brass fittings, for media temperature up to 100 °C.
ALG..3B	S55846-Z1..	

Insulation covers

For thermal insulation, separate insulation covers are available.

Type	Material	Density	Thermal conductivity at tm 40 °C	Temperature range
ALI..V..G..	Polyethylen foam	29 kg/m^3	0,0372 W/mK	-10 °C…100 °C

Ball valve	Insulation cover	Stock no.
VAG60.15..	ALI15VAG60/61	S55845-Z162
VAG60.20..	ALI20VAG60/61	S55845-Z163
VAG60.25..	ALI25VAG60/61	S55845-Z164
VAG60.32..	ALI32VAG60/61	S55845-Z165
VAG60.40..	ALI40VAG60/61	S55845-Z166
VAG60.50..	ALI50VAG60/61	S55845-Z167

Ball valve	Insulation cover	Stock no.
VBG60.15..	ALI15VBG60/61	S55845-Z168
VBG60.20..	ALI20VBG60/61	S55845-Z169
VBG60.25..	ALI25VBG60/61	S55845-Z170
VBG60.32..	ALI32VBG60/61	S55845-Z171
VBG60.40..	ALI40VBG60/61	S55845-Z172
VBG60.50..	ALI50VBG60/61	S55845-Z173

Strainer

Mounting upstream of the ball valve.

Type	Stock no.	Description	DN	Mesh [mm]
ALX15	S55845-Z174	Strainer inside threaded	15	0.5
ALX20	S55845-Z175	Strainer inside threaded	20	0.8
ALX25	S55845-Z176	Strainer inside threaded	25	0.8
ALX32	S55845-Z177	Strainer inside threaded	32	0.8
ALX40	S55845-Z178	Strainer inside threaded	40	0.8
ALX50	S55845-Z179	Strainer inside threaded	50	0.8

Equipment combinations

Type	Rotary actuators							
	GSD..9A		GQD..9A		GMA..9E		GLB..9E	
	Δp_{max}	Δp_s	Δp_{max}	Δp_s	Δp_{max}	Δp_s	Δp_{max}	Δp_s
	[kPa]							
VAG60.15-9	350	1400	350	1400	350	1400	350	1400
VAG60.20-17								
VAG60.25-22								
VAG60.32-35	–	–	–	–		1000		1000
VAG60.40-68	–	–	–	–		800		800
VAG60.50-96	–	–	–	–		600		600
VBG60.15-8T	350	–	350	–	350	–	350	–
VBG60.20-13T		–		–		–		–
VBG60.25-13T		–		–		–		–
VBG60.32-25T	–	–	–	–		–		–
VBG60.40-49T	–	–	–	–		–		–
VBG60.50-73T	–	–	–	–		–		–

Δp_{max} = maximum permissible differential pressure across ball valve's control path, valid for the entire actuating range of the motorized ball valve; for low noise operation, we recommend a maximum permissible differential pressure of 200 kPa

Δp_s = maximum permissible differential pressure at which the motorized ball valve will close securely against the pressure (close off pressure)

Rotary actuators for ball valves (overview)

Type [1]	Operating voltage	Positioning-		Spring return-		Data Sheet
		signal	time	function	time	
GSD141.9A	AC/DC 24 V	Open/Close [2]	30 s	–	–	N4655
GSD341.9A	AC 230 V					
GQD121.9A	AC/DC 24 V	2-position	30/15 s [3]	Yes	15 s	N4659
GQD321.9A	AC 230 V					
GMA121.9E	AC/DC 24 V	2- position	90/15 s [3]	Yes	15 s	N4658
GMA321.9E	AC 230 V					
GLB131.9E	AC 24 V	(2) 3- position	150 s	–	–	N4657
GLB331.9E	AC 230 V					

[1] Actuator type: Electro-motoric
[2] 2-wire SPDT (Single Pole Double Throw)
[3] open / close

Ordering

When ordering please give material, article type, purchase order text and quantity. Example:

Material	Article Type	Purchase Order (PO) text	Quantity
VAG60.25-22	VAG60.25-22	Open/Close Ball valve outside threaded, 2-Port	2
GLB131.9E	GLB131.9E	Actuator for Ball valve, NSR	2

Delivery

Ball valves and rotary actuators are supplied in separate packaging and not assembled prior to delivery.

Applications with auxiliary functions

If a ball valve application requires a rotary actuator with auxiliary functions (for example switch or potentiometer), a standard actuator with a corresponding function can be used. In this case, a mounting set ASK77.. is required **in addition** to the rotary actuator.

For assembly please consult mounting instructions accordingly.

Rotary actuator	Option	Mounting set (order text)
GMA..1E (with spring-return)	Potentiometer, switches	ASK77.2 Accessory Kit BV for GMAxx1.9E
GLB..1E (without spring-return)	Potentiometer, switches	ASK77.3 Accessory Kit BV for GLBxx1.9E
GQD..1A (with spring-return)	Switches	ASK77.4 Accessory Kit for BV GQDxx1.9A
GSD..1A (without spring-return)	Switches	ASK77.4 Accessory Kit for BV GSDxx1.9A

Notes

Safety

	**⚠ Caution** When doing service work on the ball valve / rotary actuator: • Deactivate the pump and turn off the power supply • Close the shutoff ball valves • Fully reduce the pressure in the piping system and allow pipes to completely cool down • If necessary, disconnect the electrical wires. • Before putting the ball valve into operation again, make sure the rotary actuator is correctly fitted. **National safety regulations** Failure to comply with national safety regulations may result in personal injury and property damage. • Observe national provisions and comply with the appropriate safety regulations.

Engineering

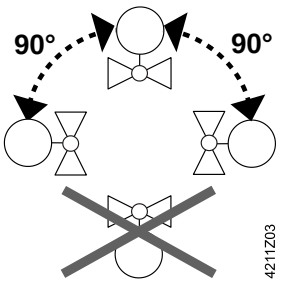
Ensure cavitation-free flow (refer to page 3).
Always use a strainer upstream of the ball valve to increase the ball valve's functional safety.

Mounting

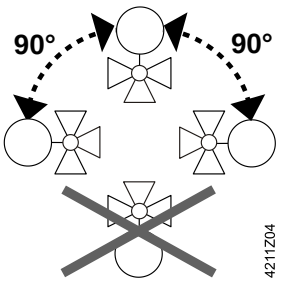
Ball valve and rotary actuator can easily be assembled on site. Neither special tools nor adjustments are required.
The ball valve is supplied with Mounting Instructions
M4214 (74 319 0923 0).

Orientation

VAG60..

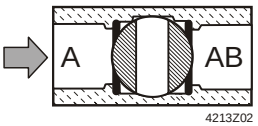
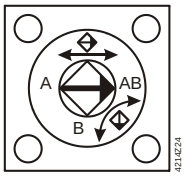
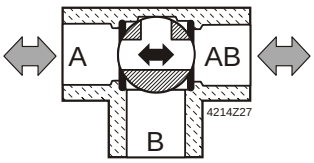
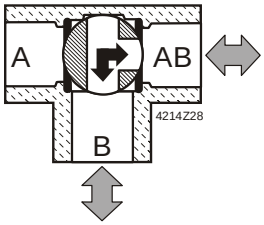


VBG60..



Direction of flow

When mounting, pay attention to the ball valve's flow direction symbol.

Ball valve	Laser mark	Delivery positon	Turned 90 °
VAG60.. Open/close ball valve 2-port	–	 A – AB = 100 %	 A – AB = 0 %
VBG60..T Changeover ball valve 3-port (T-Type drill-hole)		 A – AB = 100 % B – AB = 0 %	 A – AB = 0 % B – AB = 100 %

Commissioning

Commission the ball valve only if the rotary actuator has been mounted correctly.

Maintenance

VAG60.. and VBG60.. ball valves are maintenance-free.

Disposal

The valve is considered an electronics device for disposal in terms of European Directive 2012/19/EU and may not be disposed of as domestic garbage.

- Disassemble the valve into individual parts prior to disposing of it and sort the individual parts by the various types of materials.
- Comply with all local and currently applicable laws and regulations.

Warranty

Technical data on specific applications are valid only together with Siemens products listed under "Equipment combinations". Siemens rejects any and all warranties in the event that third-party products are used.

Technical data

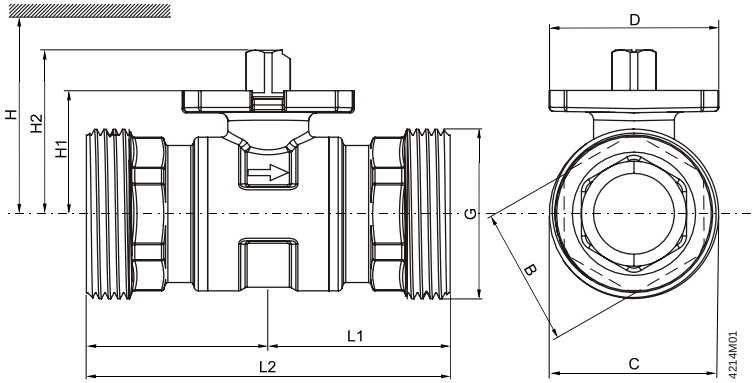
Functional data		VAG60..	VBG60..
PN class		PN 40 as per ISO 7268	
Operating pressure		To ISO 7005 within the permissible medium temperature range according to diagram on page 4	
Leakage rate	Through-port	„Waterproof“ as per EN 60534-4 L/1, better than class 5	„Waterproof“ as per EN 60534-4 L/1, better than class 4
	Bypass	–	< 1 %
Permissible media		Cold water, chilled water, low temperature hot water, high temperature hot water, water with anti-freeze. Recommendation: water treatment to VDI 2035	
Medium temperature		-10…120 °C	
Angle of rotation		90 °	

Materials	
Ball valve body	Dezincification resistant hot-pressed brass (DZR), CW602N
Ball	Dezincification resistant hot-pressed brass (DZR), CW602N, chromium-plated
Stem	Dezincification resistant hot-pressed brass (DZR), CW602N
Gland	EPDM O-rings

Dimensions / weight	
Refer to „Dimensions" page 10	
Externally threaded connections	G..B as per ISO 228-1

Standards, directives and approvals	
Pressure Equipment Directive	PED 97/23/EC
Pressure accessories Fluid group 2	As per article 1, section 2.1.4 Without CE marking as per article 3, section 3 (sound engineering practice)
Environmental compatibility	The product environmental declaration CE1E4214en contains data on environmentally compatible product design and assessments (RoHS compliance, materials composition, packaging, environmental benefit, disposal).

Dimensions

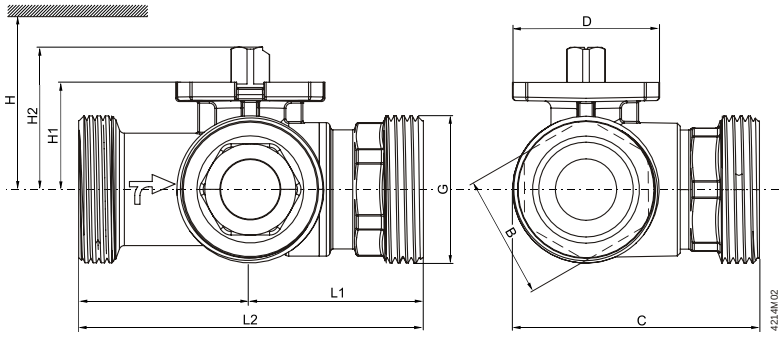


DN = Nominal size

H = Total actuator height plus minimum distance to the wall or the ceiling for mounting, connection, operation, service, etc.

H1 = Dimension from the pipe centre to install the actuator (upper edge)

Type	DN	B	C	D	G	L1	L2	H1	H2	H				kg
										GSD..9A	GQD..9A	GMA..9E	GLB..9E	
		[mm]	[mm]	[mm]	[Inch]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
VAG60.15-9	15	27	33	42	G 1 B	43.5	87	27.6	37.6	> 300	> 300	> 300	> 300	0.36
VAG60.20-17	20	35	42	42	G 1 ¼ B	44.7	89.4	30.5	40.5					0.55
VAG60.25-22	25	35	48	42	G 1 ½ B	44.7	89.4	30.5	40.5	> 320	> 320			0.57
VAG60.32-35	32	38	59.7	42	G 2 B	50.1	100.2	34.3	44.3			> 320	> 320	0.84
VAG60.40-68	40	49	65.7	42	G 2 ¼ B	58.3	116.6	39.8	49.8					1.29
VAG60.50-96	50	61	81.6	42	G 2 ¾ B	62	124	52.8	62.8			> 335	> 335	1.98



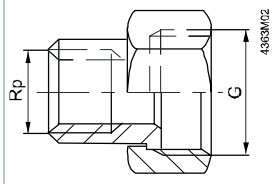
DN = Nominal size

H = Total actuator height plus minimum distance to the wall or the ceiling for mounting, connection, operation, service, etc.

H1 = Dimension from the pipe centre to install the actuator (upper edge)

Type	DN	B	C	D	G	L1	L2	H1	H2	H				kg
										GSD..9A	GQD..9A	GMA..9E	GLB..9E	
		[mm]	[mm]	[mm]	[Inch]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
VBG60.15-8T	15	27	61	42	G 1 B	44.3	88.6	27.6	37.6	> 300	> 300	> 300	> 300	0.45
VBG60.20-13T	20	35	70	42	G 1 ¼ B	49	98	30.5	40.5					0.68
VBG60.25-13T	25	35	73	42	G 1 ½ B	49.2	98.4	30.5	40.5	> 320	> 320	> 320	> 320	0.75
VBG60.32-25T	32	38	94	42	G 2 B	57	114	34.3	44.3					1.2
VBG60.40-49T	40	49	107	42	G 2 ¼ B	63.8	127.6	39.8	49.8					1.84
VBG60.50-73T	50	61	123	42	G 2 ¾ B	69	138	52.8	62.8			> 335	> 335	2.83

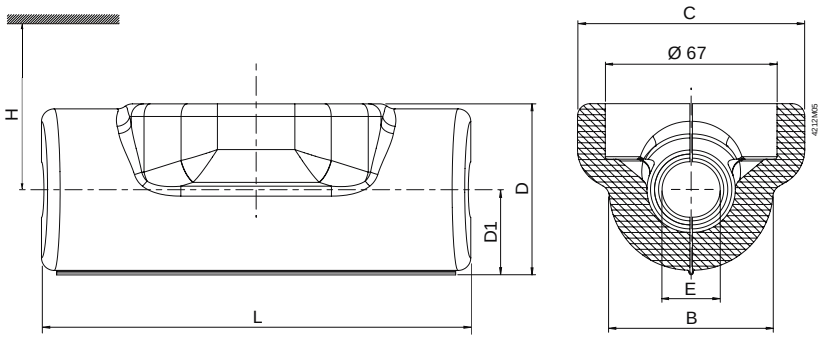
Screwed fittings



For 2-port valves VAG60.. (Set of 2)		For 3-port valves VBG60.. (Set of 3)		for valve type	G [Inch]	Rp [Inch]
Type	**Stock no.**	**Type**	**Stock no.**			
ALG152	S55846-Z100	ALG153	S55846-Z101	V..G60.15	G 1B	Rp ½
ALG202	S55846-Z102	ALG203	S55846-Z103	V..G60.20	G 1¼B	Rp ¾
ALG252	S55846-Z104	ALG253	S55846-Z105	V..G60.25	G 1½B	Rp 1
ALG322	S55846-Z106	ALG323	S55846-Z107	V..G60.32	G 2B	Rp 1¼
ALG402	S55846-Z108	ALG403	S55846-Z109	V..G60.40	G 2¼B	Rp 1½
ALG502	S55846-Z110	ALG503	S55846-Z111	V..G60.50	G 2¾B	Rp 2

- On valve side: cylindrical thread to ISO 228-1
- On pipe side: with cylindrical thread to ISO 7-1
- ALG..B for media temperature up to 100 °C

Insulation covers for ball valves 2-port (VAG60..)

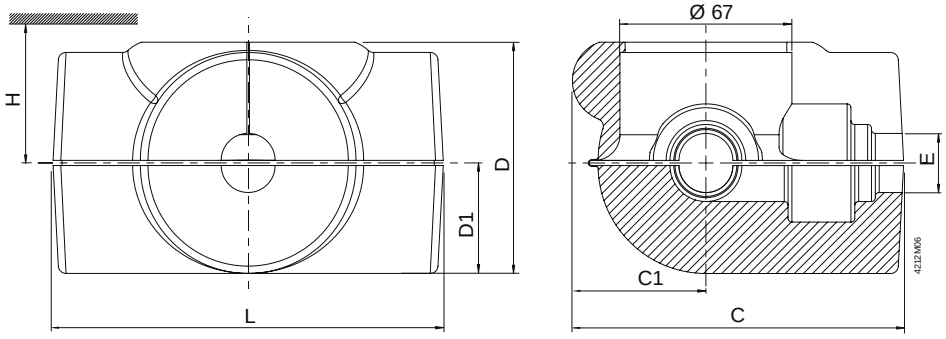


DN = Nominal size

H = Total actuator height plus mini-mum distance to the wall or the ceiling for mounting, connection, operation, service, etc.

Type		DN	B	C	D	D1	E	L	H				kg
									GSD..9A	GQD..9A	GMA..9E	GLB..9E	
Insulation cover	for valve type		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[g]
ALI15VAG60/61	VAG60.15..	15	64	92	66	32	21	170	> 300	> 300	> 300	> 300	24
ALI20VAG60/61	VAG60.20..	20	80	88	88	42	27	170					30
ALI25VAG60/61	VAG60.25..	25	90	95	100	48	34	185	> 320	> 320	> 320	> 320	32
ALI32VAG60/61	VAG60.32..	32	102	100	108	54	43	185					40
ALI40VAG60/61	VAG60.40..	40	118	105	124	60	48	215					52
ALI50VAG60/61	VAG60.50..	50	130	110	134	66	61	225			> 335	> 335	59

Isolationsschalen für Regelkugelhähne 3-Weg (VBG60..)



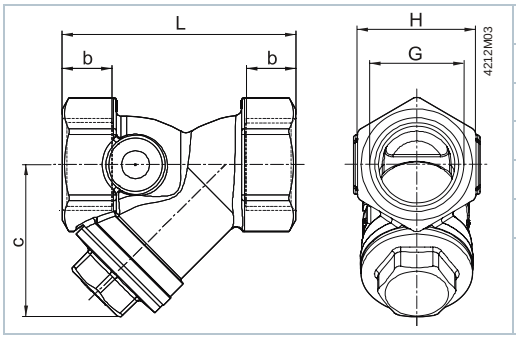
DN = Nominal size

H = Total actuator height plus mini-mum distance to the wall or the ceiling for mounting, connection, operation, service, etc.

Type		DN	C	C1	D	D1	E	L	H				kg
									GSD..9A	GQD..9A	GMA..9E	GLB..9E	
Insulation cover	for valve type		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[g]
ALI15VBG60/61	VBG60.15..	15	132	50	87	42	21	155	> 300	> 300	> 300	> 300	45
ALI20VBG60/61	VBG60.20..	20	135	58	97	49	27	170					55

ALI25VBG60/61	VBG60.25..	25	145	51	104	51	34	185	> 320	> 320	> 320	> 320	65
ALI32VBG60/61	VBG60.32..	32	175	61	124	60	43	210					88
ALI40VBG60/61	VBG60.40..	40	185	61	130	63	48	225					105
ALI50VBG60/61	VBG60.50..	50	195	65	138	67	61	235			> 335	> 335	115

Strainer



Typ	DN	b [mm]	c [mm]	G [Zoll] *	L [mm]	H [mm]	[kg]
ALX15	15	12	38	G ½	54	27	0.178
ALX20	20	15	43	G ¾	67	34	0.290
ALX25	25	16	53	G 1	79	41	0.410
ALX32	32	17	64	G 1¼	98	51	0.680
ALX40	40	18	70	G 1½	106	57	0.874
ALX50	50	20	85	G 2	122	69	1.428

* ISO 228-1

Revision numbers

Type		Valid from rev. no.
Open/close ball valves 2-port VAG60..	Changeover ball valves 3-port VBG60..T	
2-port	3-port	
–	VBG60.15-8T	..A
VAG60.15-9	–	..A
–	VBG60.20-13T	..A
VAG60.20-17	–	..A
–	VBG60.25-13T	..A
VAG60.25-22	–	..A
–	VBG60.32-25T	..A
VAG60.32-35	–	..A
–	VBG60.40-49T	..A
VAG60.40-68	–	..A
–	VBG60.50-73T	..A
VAG60.50-96	–	..A

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