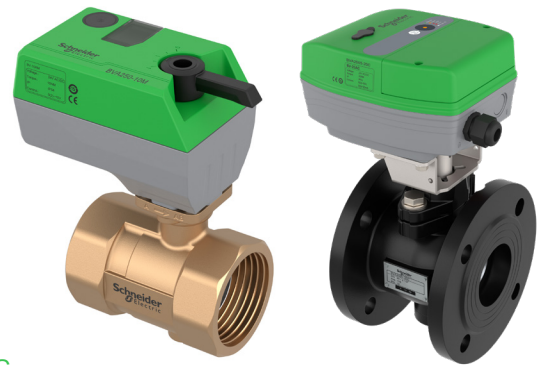


BVA2...15...150

Control Ball Valves



Product Description

Schneider Electric's Control Ball Valves are a new generation of characterized control valves. The V-shaped ball core design provides a perfect equal percentage flow curve. Coupled with high precision valve actuators, CBVs ensure precise control at high flow capacity, often eliminating the need of a pipe reducer.

Applications include:

Hot and Chilled water coils in air handling units, unit ventilators and VAV boxes.

Actuator Specifications

Rated torque	3, 5, 10, 20, 50 N-m
Operating Voltage	24 Vac \pm 15%, 24 Vdc \pm 15%
Control	Modulating/3-position
Frequency	50 Hz or 60 Hz
Power Requirements (24 V)	
3, 5, 10 N-m Running	24V AC: 25 VA; 24V DC: 10 VA
20 N-m Running	24V AC: 30 VA; 24V DC: 12 VA
50 N-m Running	24V AC: 42 VA; 24V DC: 20 VA
Timing (90°)	30s
Sensitivity (proportional control only)	1.00%
Dead zone	3%
Actuator location protection class	IP54 for 3/5/10 N-m IP65 for 20/50 N-m
Impedance (proportional control only)	
Voltage input impedance	> 100 K
Current input impedance	< 0.2 K
Load requirement (proportional control only)	
Voltage output load	> 2 K
Current output load	< 0.4 K for 3/5/10 N-m < 0.5 K for 20/50 N-m
Control signal	0(2)-10 V, 0(4)-20 mA
Feedback signal	0(2)-10 V, 0(4)-20 mA
Environmental	
Operational Temperature	-15...+ 55 °C
Shipping Temperature	-25...+ 70 °C
Storage Temperature	-15...+ 55 °C
Humidity	\leq 95% RH
Main Construction Materials	

Features

- V-shaped ball core design creates a perfect equal percentage flow characteristic with exceptional stability.
- No pressure surge when the valve is opened or closed.
- High rangeability (> 100:1) and close-off pressure.
- DIP switch selectable control functions addressing many different application requirements.

Actuator Cover	PC
Actuator Housing	PC for 3, 5, 10 N-m ASTM B85 Pressure die-cast aluminum, anti-corrosion coating for 20/50N-m
Agency Approvals and CE	PED directive 2014/68 / EU EMC directive 2014/30 / EU Low voltage directive 2014/35 / EU Machinery directive 2006/42 / EC

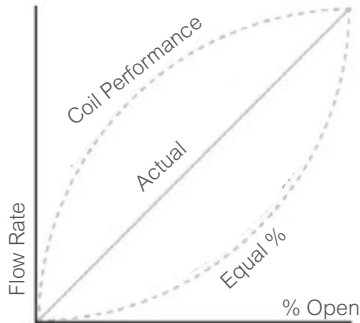
Valve Specifications

Size	DN15...DN150
Pressure	
DN15...DN50	PN25
DN65...DN150	PN16
Flow Characteristic	Equal Percentage
Rangeability	> 100:1
Leakage Rate	0...0.01% Kvs, no leakage on Pre-Delivery Inspection
Δ Pm	Refer to the table on the next page
Media Compatibility	
Chilled or hot water	50% glycol concentration
Medium Temperature	-15...+120 °C
Connection Standard	
DN15...DN50	Female threaded connection ISO 7/1
DN65...DN150	Flanged connection ISO 7005-2
Main Construction Materials	
Valve Body	Brass
DN15...DN50	Ductile Iron
DN65...DN150	Stainless Steel
Valve Core and Stem	Stainless Steel
Sealing Ring	FKM

Ball Valve Design, Manufacture, Testing, Installation Standards

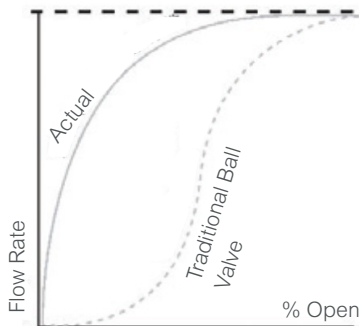
GB / T 13927-2008
 JBT 8861-2004
 GBT / 30832-2014
 ISO 5211-2001
 ISO 7005.2-1992 PN10 / 16
 ISO 228-1

Valve Principal



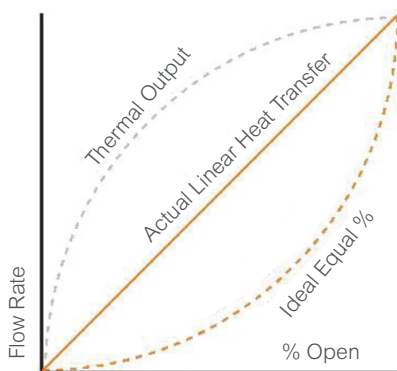
Control over the output characteristics of the water system

To ensure excellent stable control in the HVAC system, the flow characteristics of the control valve should compensate for the non-linear output characteristics of the heat exchanger. To achieve a linear heat output relationship between the heat exchanger and the valve, an equal percentage flow characteristic is optimal.



Traditional ball valve flow characteristics

Conventional ball valves that do not have the “V” type core will exhibit large increases in flow with very little actuator travel. Heat transfer output is directly affected and uncontrollable. The HVAC control system will hunt to find the proper heat transfer output to satisfy the room temperature.



Schneider Electric Ball valve Characteristic

Conventional ball valves are not suitable for temperature control for the following reasons:

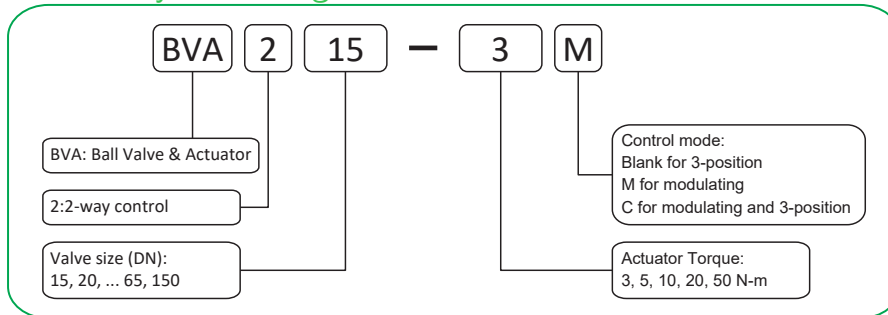
- Large, uncontrollable flow during initial valve opening
- Larger flow coefficient than equal percentage valves allow for coil overflow and inefficiency.
- Flow is not controlled in partial load conditions.

Schneider Electric’s new generation of ball valves provide a perfect equal percentage flow curve. The new “V” type core is used, which not only greatly improves the valve’s rangeability but also matches the heat exchanger, thus providing linear heat output. Utilizing high-precision valve actuators, the valve is precisely controlled, eliminating the need for water pipe reductions to ensure good control.

Available Part Numbers

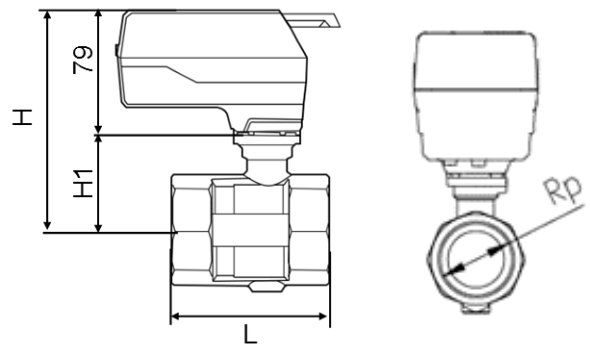
Size	Assembly Part No. (Recommended Order No.)	Control Signal	Actuator Torque	Maximum Close-off Pressure	Kvs (m ³ /H)
DN15	BVA215-3M	0(2)~10V DC, 0(4)~20 mA	3	1400 kPa	5.5
	BVA215-3	3-position			
DN20	BVA220-3M	0(2)~10V DC, 0(4)~20 mA			
	BVA220-3	3-position			
DN25	BVA225-3M	0(2)~10V DC, 0(4)~20 mA			
	BVA225-3	3-position			
DN32	BVA232-5M	0(2)~10V DC, 0(4)~20 mA	5	500 kPa	23
	BVA232-5	3-position			
DN40	BVA240-5M	0(2)~10V DC, 0(4)~20 mA			
	BVA240-5	3-position			
DN50	BVA250-5M	0(2)~10V DC, 0(4)~20 mA	10	1400 kPa	60
	BVA250-5	3-position			
	BVA250-10M	0(2)~10V DC, 0(4)~20 mA			
	BVA250-10	3-position			
DN65	BVA2065-20C	0(2)~10 V DC, 0(4)~20 mA, 3-position	20	800 kPa	120
DN80	BVA2080-20C				192
DN100	BVA2100-20C				279
DN125	BVA2125-50C		50		398
DN150	BVA2150-50C				540

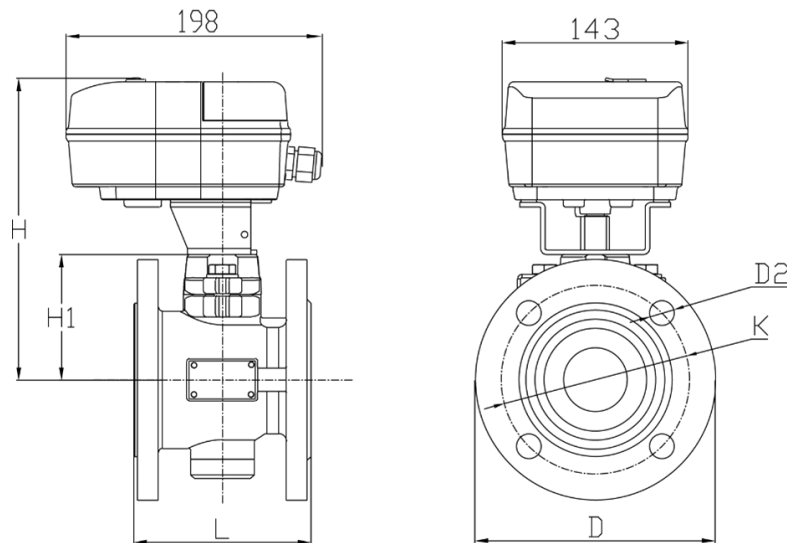
Assembly Ordering



Dimensions

Size	G thread	L (mm)	H1 (mm)	H (mm)	kg
DN15	1/2	55	38	117	0.9
DN20	3/4	60	42	121	0.9
DN25	1	65	45	124	1
DN32	1 1/4	80	50	129	1.2
DN40	1 1/2	85	48	127	1.3
DN50	2	100	60	139	1.9

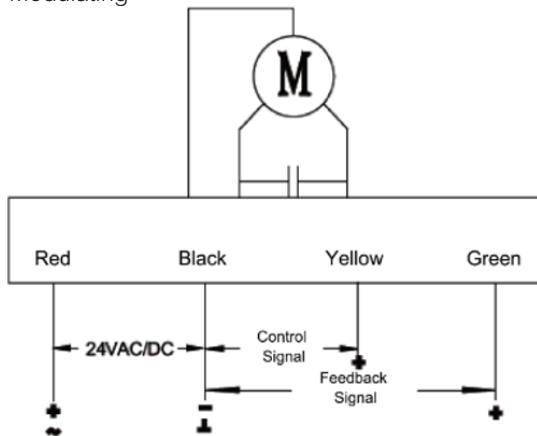




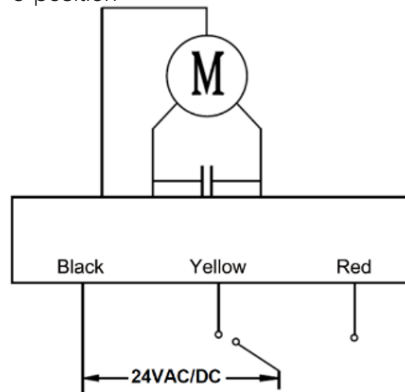
Model	Size	D (mm)	D2 (mm)	K (mm)	L (mm)	H1 (mm)	H (mm)	kg
BVA2065-20C	DN65	185	4 x 19	145	137	97	237	12.2
BVA2080-20C	DN80	200	8 x 19	160	168	107	242	14.7
BVA2100-20C	DN100	220		180	211	122	257	20.2
BVA2125-50C	DN125	250		210	263	138	273	28.2
BVA2150-50C	DN150	285	8 x 23	240	315	149	284	38.7

Wiring and Settings Instructions for 3/5/10 N-m

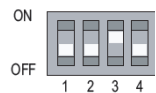
Modulating



3-position

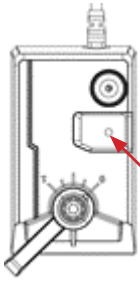


DIP Switches Default Settings



DIP	Function	Setting	Description
S1-1	Control/feedback range	ON	4 ~ 20 mA or 2 ~ 10 V DC
		OFF	0 ~ 20 mA or 0 ~ 10 V DC (Factory setting)
S1-2	Control signal setting	ON	The control signal is a current type
		OFF	The control signal is a voltage type (Factory setting)
S1-3	Impedance match control signal	ON	Voltage type (Factory setting)
		OFF	Current type
S1-4	Feedback signal setting	ON	Feedback signal is a current
		OFF	Feedback signal is a voltage type (Factory setting)

Indicator Lamp



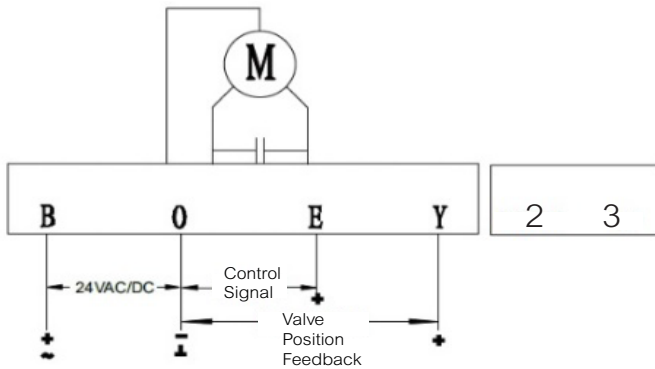
LED	Status	Description
Green	Steady	Normal operating mode
Orange	Flicker (frequency ~ 1 Hz)	Self-stroking mode of operation
Red	Flicker (frequency ~ 2 Hz)	Error alarm

Indicator Lamp

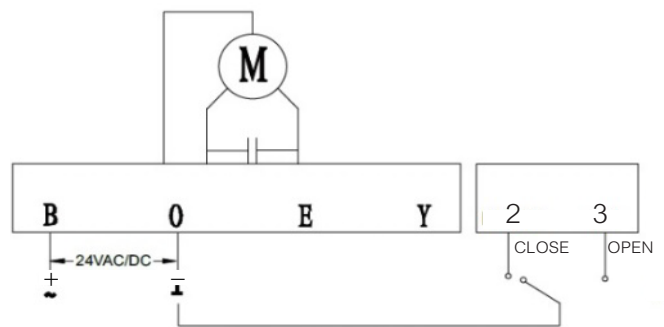
Wiring and Settings Instructions for 20/50 N-m

1. Disconnect power to the actuator.
2. Open the top cover to the terminal: do not disassemble other components.
3. Please check carefully before connecting the supply voltage, the product must be handled and wired in accordance with safety requirements and regulations.
4. After wiring is completed replace cover.

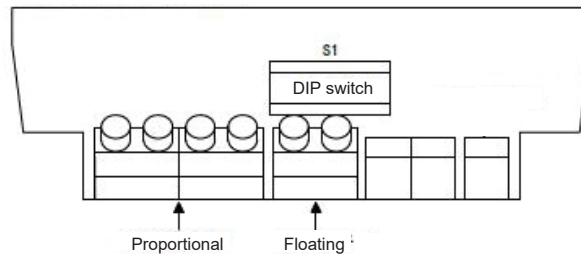
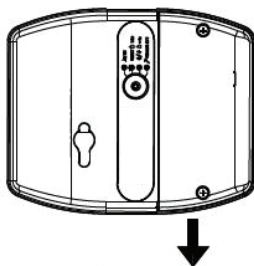
24V Proportional



24 V Floating



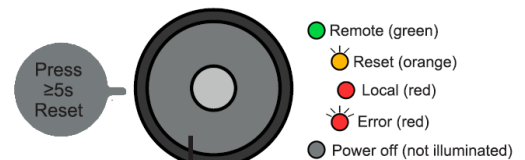
24V



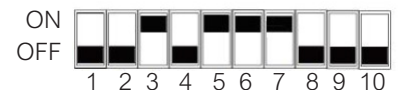
Actuator Indicators

Indicator Lamp

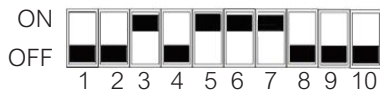
LED Color	Status	Description
Green	Steady	Normal operating mode
Orange	Flicker (frequency~ 1Hz)	Self-stroking mode of operation
Red	Flicker (frequency~ 2Hz)	Error alarm
Red	Steady	Local mode
Off	Off	Power off



Reset Button/Indicator Lamp



DIP Switches



DIP	Function	Setting	Description
S1	Control/feedback range	ON	4 ~ 20 mA or 2 ~ 10 V DC
		OFF	0 ~ 20 mA or 0 ~ 10 V DC (Factory setting)
S2	Control signal setting	ON	The control signal is a current type
		OFF	The control signal is a voltage type (Factory setting)
S3	Impedance match control signal	ON	The control signal is a voltage type (Factory setting)
		OFF	The control signal is a current type
S4	Feedback signal setting	ON	Valve position feedback signal is a current type
		OFF	Valve position feedback signal is a voltage type (Factory setting)
S5	Direct/reverse acting	ON	Direct acting: When the control signal increases, the actuator to "1" Running direction (Factory setting)
		OFF	Reverse acting: When the control signal increases the actuator to "0" Running direction
S6	Mode setting off signal	ON	If the control signal is cut off, inside the actuator control automatically provides a minimum signal (Factory setting)
		OFF	1) When the control signal is a voltage-type, if the control signal is cut off, inside the actuator control automatically provides a maximum signal 2) When the control signal is a current-type, if the control signal is cut off, inside the actuator control automatically provides a minimum signal
S7	Calibration/self-stroke	ON	Each time actuator is powered runs full stroke cycle (Factory setting)
		OFF	Full stroke cycle only initiated via reset button
S8	Control mode (when S9 for OFFTime)	ON	Floating control
		OFF	Modulating proportional control (Factory setting)
S9	Control mode	ON	-
		OFF	Modulating and Floating control (Factory setting)
S10	Actuator status when control signal is lost	ON	When the control signal is lost, the actuator remains at the current position (only applicable to 4 ~ 20 mA control)
		OFF	The actuator works according to S1-6 settings (Factory setting)

Application Notes

Ensure actuator is installed correctly to valve body.

1. Once the assembly is finished, connect power and control signal cable according to the wiring diagram.
2. Set DIP switches for the desired functionality (DIP switches can also be set while the actuator has power). On power up, the selections take effect immediately (this step for the purpose of the actuator and valve body to match)
3. Turn on the power (DIP switches can be changed with power on).
 - a. If Calibration/Self-stroke is set to ON (S7=ON), the actuator indicator lamp will flash yellow. The actuator will run to the "0" position (valve fully closed), and then run to the "1" position (valve fully open). Once complete, the actuator indicator lamp will change from flashing yellow to solid green. The actuator will now follow the control signal.
 - b. If Calibration/Self-stroke is set to OFF (S7=OFF), the actuator will follow the control signal.

Notes:

- If the actuator indicator lamp is flashing red, the actuator must be reset. Press the Indicator lamp button for >5 seconds to initiate reset.
- Factory default setting is for automatic self-stroking (S7 is ON), i.e., every time the power is turned off, the actuator will automatically run a full stroke cycle.