SIEMENS

Ingenuity for life

Resilient Seat Butterfly Valves

usa.siemens.com/valves

More robust valve design lasts even longer.

Butterfly valves are the workhorse in a hydronic system needed to isolate flow with bubble-tight shutoff. At Siemens, we continuously challenge ourselves to improve butterfly valves to exceed hydronic system demands with improved performance, efficiency and value. So we set our sights on designing the best version of the most widely used butterfly valve type to be more robust and last even longer – delivering better value. These valves are ideal for chilled water, hot water and open-loop cooling tower applications.

A better butterfly valve

Siemens enhanced resilient seat butterfly valve series uses the best materials to withstand continuous high temperature operation at 250°F. The valve disc is built for high corrosion resistance and increased strength. While these valves are improved for continuous high-temperature use, every hydronic system can benefit from these butterfly valves for affordable long-lasting performance.

Greater durability and reliability

Resilient, high-temperature EPDM seat is suitable for continuous 250°F applications

- The high purity, peroxide-cured seat has better shape and memory retention over the service life of the valve
- Molded tongue-and-groove seat design lowers torque and provides bubble-tight shutoff

Valves tested to 30,000 full strokes, 300,000 repositions and meet ANSI 125 standard

- Siemens valve and actuator are tested from the factory line to assure longer performance and bubble-tight shutoff for 0% leakage
- Lifecycle testing performed at continuous 250°F
- Industrial actuators are tested to 15,000 full strokes and 1.2 million repositions
- OpenAir commercial actuators are tested to 1.5 million repositions

New and improved seat for longer lifespan.

Resilient Seat Butterfly Valve Features

- 2”–24” sizes (50-610 mm)
- Full cut / Under cut
- 2-Way / 3-Way assemblies
- ASTM A126 Class A cast iron body
- 316 Stainless steel disc (2”–12”)
- Electroless nickel plated ductile iron disc (14”–24”)
- 416 Stainless Steel stem
- Heavy duty acetal stem bearing
- High purity, peroxide cured, high temperature EPDM seat
- -20°F to continuous 250°F (-28°C to 121°C) temperature range
- Nitrile butadiene rubber packing

Actuator Features

Commercial OpenAir™ Series

Electronic fail-safe option provides close-off during power loss.

- GCA Torque: 160 lb-in for sizes 2”–4”
- GIB Torque: 310 lb-in for sizes 2”–6”
- On/off, floating and modulating control signals
- 24 VAC Power supply
- NEMA 2 rated
- UL and CE certified
- Manual override capable

GCA Spring Return

GIB Non-Spring Return

Industrial A-Series

Low profile, compact design directly mounts to valves for easy installation

Integrated heater included as standard feature

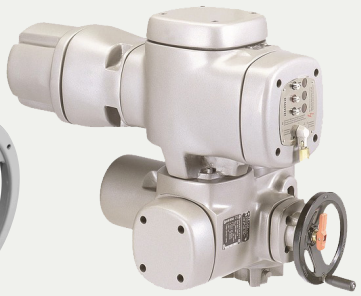
Easy manual override. Disconnect supply power at the valve with the hand wheel for manual repositioning

High visibility position indicator viewable from any angle for quick troubleshooting

Enclosure built for high impact, heat and chemical resistance

- Low-Medium Torque Model: 600–18,000 lb-in for sizes 2”–18”
- High Torque Model: 21,300–40,680 lb-in for sizes 20”–24”
- On/Off and modulating control signals
- Low-Medium Torque Model: 24 VAC/DC, 120 VAC power supply
- High Torque Model: 120 VAC power supply
- NEMA 4X rated for use in rugged conditions
- ISO 5211 rated
- UL and CE certified

Low-Medium Torque Model



High Torque Model

Resilient Seat Butterfly Valve Selection Guide

All sizes available in 2-way and 3-way configuration

	Close Off Rating (PSI)				OpenAir Commercial Actuators		Industrial Actuators	
					Spring Return	Non-Spring Return	Non-Spring Return	
					GCA	GIB	A-Series	
							Low-Medium Torque	High Torque
								
Size	Full Cut	Under Cut	Disc Material	Resilient Seat Material				
2″	175	N/A	316 Stainless Steel	High Purity, Peroxide Cured, High Temp EPDM	•	•	•	
2.5″	175				•	•	•	
3″	175				•	•	•	
4″	175	50 PSI			•	•	•	
5″	175					•	•	
6″	175					•	•	
8″	175						•	
10″	175						•	
12″	175						•	
14″	150		Electroless Nickel Plated Ductile Iron				•	
16″	150						•	
18″	150						•	
20″	150							•
24″	150							•

Valve Sizing Steps

1. Determine the designed Cv as follows:

Q = Flow in gallons per minute (GPM) required to pass through the valve
SG = Specific gravity of the fluid (water = 1)
ΔP = Designed pressure drop across the valve in PSI
Cv = Flow coefficient

$$Cv = \frac{Q\sqrt{SG}}{\sqrt{\Delta P}}$$

Note: for modulating butterfly valves, size for design flow at 60° rotation

2. Determine whether the valve should be line sized or sized to match the designed pressure drop

<u>Option 1:</u> On/Off Valves
Select the valve size to equal the pipe size
<u>Option 2:</u> Modulating Valves
Size the valve for design flow at 60° open

3. Determine actual pressure drop as follows:

$$\Delta P = \left(\frac{Q\sqrt{SG}}{Cv}\right)^2$$

Pressure drop recommended to be no higher than 29 PSI or match the designed pressure drop. 3, 4, 5, and 6 PSI commonly accepted for modulating applications.

4. Ensure close-off requirements met.

2-Way Flow Coefficients

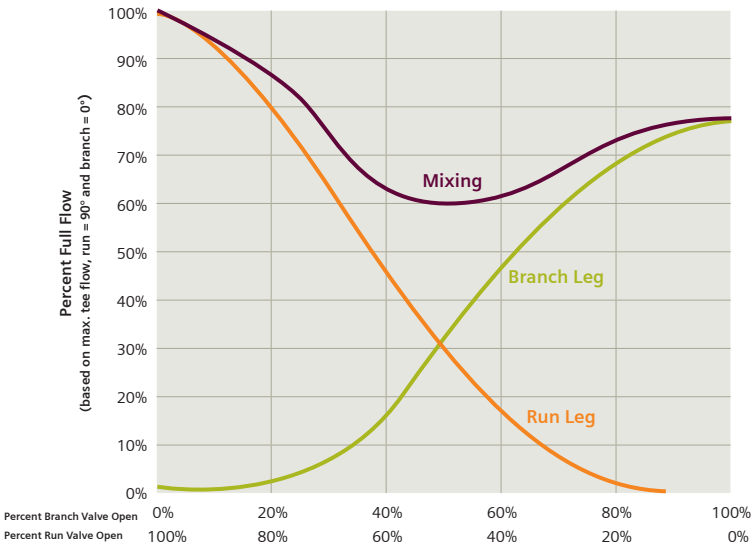
Cv at Opening Angles, Two-Way Valves.

Valve Size (Inches)	Disc Opening Angle								
	10°	20°	30°	40°	50°	60°	70°	80°	90°
2″	1	7	16	27	43	61	84	114	144
2.5″	1.5	11	24	43	67	107	163	223	282
3″	2	15	35	61	96	154	267	364	461
4″	3	27	62	109	171	274	496	701	841
5″	5	43	98	170	268	428	775	1,146	1,376
6″	6	56	129	225	354	567	1,025	1,542	1,850
8″	12	102	241	421	680	1,081	1,862	2,842	3,316
10″	19	162	382	667	1,076	1,710	2,948	4,525	5,430
12″	27	353	555	1,005	1,594	2,563	4,393	6,731	8,077
14″	34	299	756	1,320	2,149	3,384	5,939	9,974	10,538
16″	45	397	1,001	1,749	2,847	4,483	7,867	11,761	13,966
18″	58	507	1,281	2,237	3,643	5,736	10,062	14,496	17,214
20″	72	632	1,595	2,786	4,536	7,144	12,535	1,812	22,339
24″	259	1,028	2,387	4,244	6,962	11,040	18,235	27,186	33,154

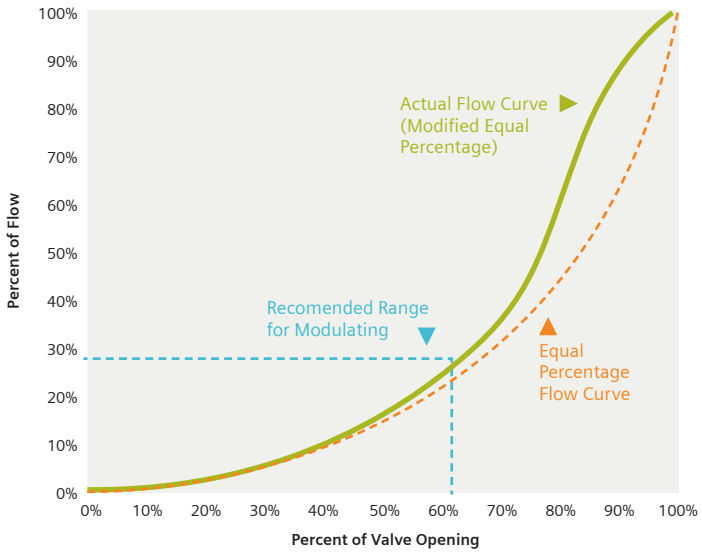
Flow Coefficients (Cv) = The amount of water in gallons per minute, at 60°F that will pass through a given orifice with a one pound pressure drop.

3-Way Assembly at Constant Valve Differential Pressure

(corrected for tee loss)



Equal Percentage Flow Curve Chart



Free factory assembly and valve tagging

Valves and valve actuators are assembled and tagged for direct delivery to any jobsite, free of charge. All you do is specify each valve's location when placing your initial order and we will tag them before shipping to save you installation time and expense. For questions call **800-516-9964** or email **bgcustomersupport.us.sbt@siemens.com**

SIEMENS
B204FC-SA166.600
Valve PN: B204F
Act PN: A166.600
CONFIG:
BFV_2 CHILLER_1
DATE: xx/yy
ORIGIN: CH
PO: XXXXXXX

Part Number Configuration

Valve and actuator assemblies are available for either standard temperature (intermittent 250°F) operation or high temperature (continuous 250°F) operation.

Standard temperature assemblies can be field upgraded to high temperature at any time simply by updating the actuator. There is no need to remove the valve from the piping.

SAMPLE:	B	2	02	F	C	-	S	A	1	2	6	.	600

Valve Type

Butterfly

Action

2	2-Way
3	3-Way

Valve Size

02=2", 25=2.5", 03=3", 04=4", 05=5", 06=6", 08=8", 10=10", 12=12", 14=14", 16=16", 18=18", 20=20", 24=24"

Disc Type

F	Full Cut
U	Under Cut

Valve Configuration

3-Way	A, B, C, D
2-Way	O = Normally Open
	C = Normally Closed
	M = Valve assembly with manual operator

Denotes Assembly

Application

S	Standard Temperature – Intermittent 250°F Operation
H	High Temperature – Continuous 250°F Operation
Blank	Siemens Commercial Actuator

Actuator

A	Industrial Actuator
GCA	Siemens SR Commercial Actuator
GIB	Siemens NSR Commercial Actuator

Voltage

1	24V
2	120V

Control Signal

2	2-Position
3	Floating (Commercial Actuators only)
6	Modulating (0-10V)

End Switches

1	No Switches
6	Switches

Separator

Industrial Actuator Torque (lb-in)

600=600, 1K=1200, 2K=2000, 3K=3000, 5K=5000, 6K=6500, 13K=13000, 18K=18000, 21K=21300, 41K=40680, 3U=Shaft adapter with 3 foot cable (Commercial Actuators only)

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