



# 87 SERIES BUTTERFLY VALVE



## Features

### Characteristic

Butterfly valve with eccentric disc, metal or soft seated.

### Available Types

#### **87-01 and 87-51**

With metal seat, suitable for applications where shutoff is not critical.

#### **87-02 and 87-52**

With metal seat, suitable for applications that require a good shutoff.

#### **87-11 and 87-61**

With soft seat, suitable for applications that require tight shutoff.

### Sizes

2, 3, 4, 6, 8, 10, 12, 14, 16, 18, 20, 24 and 28 in.  
Other sizes may be supplied upon request.

### Pressure-Temperature Ratings

ANSI B16.34 Class 150 for types 87-01/  
87-02/87-11.

ANSI B16.34 Classes 150, 300 or 600 and DIN  
up to PN 40 for types 87-51/87-52/87-61.

### Body Construction

Flangeless, wafer type design.

### Face-to-Face Dimension

According to API 609 table 1 for ANSI B16.34  
Class 150.

According to API 609 table 2 for ANSI B16.34  
Class 300 or 600.

### Constructions Materials

See tables 1, 2, 3, 4 and 5 for standard  
materials. Other materials are available on  
application.

### Packing Materials

See table 6.

### Flow Characteristics and Cv

Inherent flow characteristic is modified equal  
percentage. See table 7.

### Shutoff Classifications (ANSI/FCI 70-2)

87-01 and 87-51 - Class I

87-02 and 87-52 - Class IV

87-11 and 87-61 - Class VI

## Main parts identification

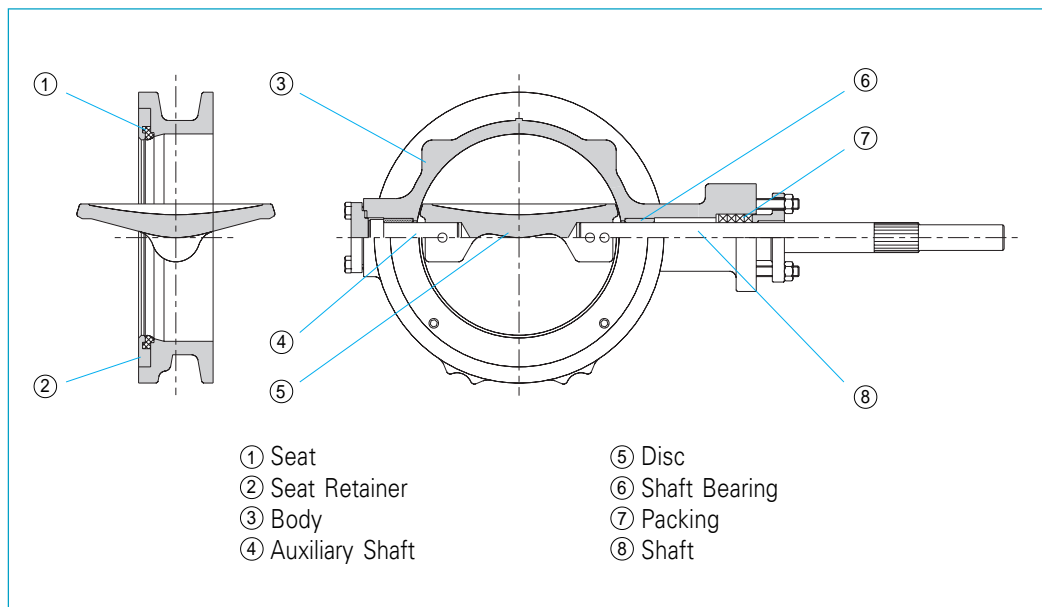


Table 1  
Body materials

MATERIAL	TEMPERATURE RANGE (°F) <sup>(1)</sup>
Carbon steel (WCB)	-20 to 800
Cr-Mo steel (C5)	-20 to 1200 <sup>(2)</sup>
304 stainless steel (CF8)	-425 to 1500 <sup>(2)</sup>
304L stainless steel (CF3)	-425 to 850
316 stainless steel (CF8M)	-425 to 1500 <sup>(2)</sup>
316L stainless steel (CF3M)	-425 to 850

(1) Do not exceed the maximum pressure and temperature for the class rating of the valve.

(2) 1000 °F for ANSI Class 150.

Table 2  
Disc materials

MATERIAL	TEMPERATURE RANGE (°F)
Carbon steel <sup>(1)</sup>	-20 to 800
Carbon steel with hard plated contact surface	-20 to 800
Cr-Mo steel <sup>(1)</sup>	-20 to 1200
Cr-Mo steel with hard plated contact surface	-20 to 930
304 stainless steel	-425 to 1500
304 stainless steel with hard plated contact surface	-425 to 930
304L stainless steel	-425 to 850
304L stainless steel with plated contact surface	-425 to 850
316 stainless steel	-425 to 1500
316 stainless steel with plated contact surface	-425 to 930
316L stainless steel	-425 to 850
316L stainless steel with hard plated contact surface	-425 to 850

(1) Only for 87-01 and 87-51 types.

Table 3  
Shaft materials

MATERIAL	TEMPERATURE RANGE (°F)
304 stainless steel <sup>(1)</sup>	-20 to 600
304 stainless steel with Stellite coating	-425 to 1200
304L stainless steel with Stellite coating	-425 to 850
316 stainless steel <sup>(1)</sup>	-20 to 600
316 stainless steel with Stellite coating	-425 to 1200
316L stainless steel with Stellite coating	-425 to 850
17.4 PH stainless steel	-450 to 750

(1) Only for bronze, bronze mesh impregnated with PTFE or 316 stainless steel mesh impregnated with PTFE bearing.

Table 4  
Shaft bearing  
materials

MATERIAL	TEMPERATURE RANGE (°F)
Bronze	-450 to 450
304 stainless steel with Stellite coating	-425 to 1200
304L stainless steel with Stellite coating	-425 to 850
316 stainless steel with Stellite coating	-425 to 1200
316L stainless steel with Stellite coating	-425 to 850
420 stainless steel	-4 to 750
17.4 PH stainless steel	-450 to 750
Bronze mesh impregnated with PTFE	-128 to 302
316 stainless steel mesh impregnated with PTFE	-128 to 302

Table 5  
Seat materials

TYPE	MATERIAL	TEMPERATURE RANGE (°F)
87-01 and 87-51	Carbon steel	-20 to 650
	304 stainless steel	-425 to 930
	304L stainless steel	-425 to 850
	316 stainless steel	-425 to 930
	316L stainless steel	-425 to 850
87-02 <sup>(1)</sup>	304 stainless steel	-255 to 750
	304L stainless steel	
	316 stainless steel	
	316L stainless steel	
87-52	304 stainless steel with hard nickel plating	-255 to 750
	304L stainless steel with hard nickel plating	
	316 stainless steel with hard nickel plating	
	316L stainless steel with hard nickel plating	
87-11	Buna N	-40 to 250
	Neoprene	-50 to 300
	Viton	-15 to 400
	EPDM	-65 to 300
87-61 <sup>(2)</sup>	PTFE	-128 to 392

(1) Disc with hard chrome plating.

(2) Disc with hard nickel plating.

Table 6  
Packing materials

MATERIAL	TEMPERATURE RANGE (°F)
Braided PTFE	-22 to 450
Graphite	-94 to 2000
Asbestos with PTFE <sup>(1)</sup>	-22 to 450

(1) Used only in case of no restrictions to asbestos.

Table 7  
Flow coefficient - Cv

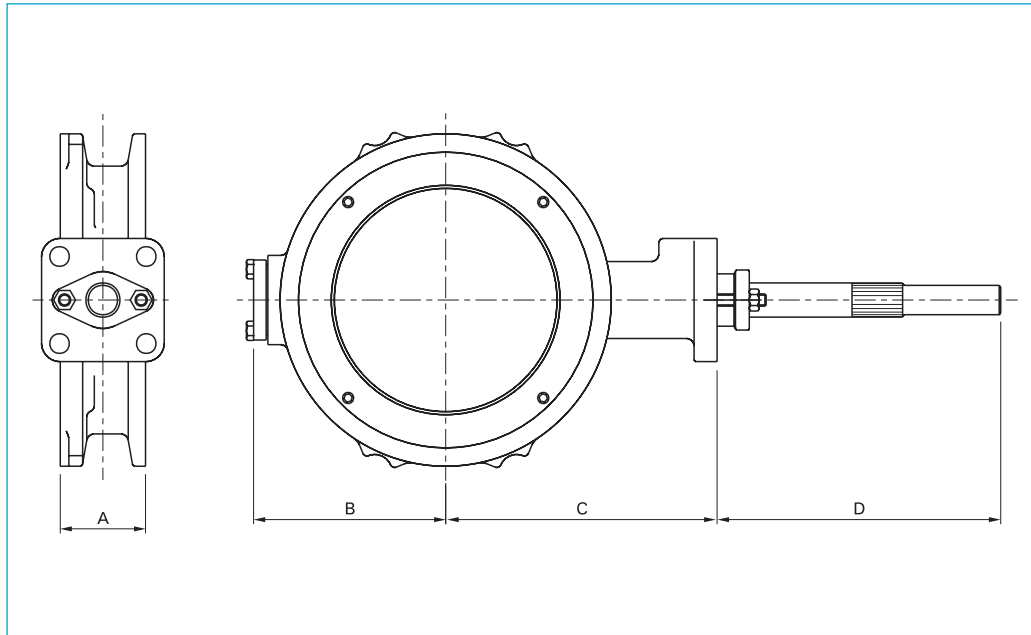
BODY SIZE (in.)	OPENING ANGLE								
	10°	20°	30°	40°	50°	60°	70°	80°	90°
2	3	6.3	11.2	19	30	43	75	115	140
3	8	17.7	31.2	53	82	122	206	320	390
4	17	36.3	64	110	170	250	425	658	800
6	37	80	141	240	370	550	936	1460	1770
8	71	153	270	460	710	1055	1780	2775	3370
10	116	250	440	750	1160	1720	2910	4530	5500
12	151	380	640	1520	3040	4370	5770	6830	7600
14	186	467	790	1870	3740	5370	7090	8400	9340
16	247	621	1050	2480	4960	7130	9415	11150	12400
18	318	801	1350	3200	6400	9200	12150	14390	16000
20	370	930	1570	3715	7430	10680	14100	16700	18570
24	576	1450	2450	5800	11580	16650	21980	26030	28950
28	850	2140	3613	8550	17100	24570	32440	38430	42730

The **87 Series** control valve is normally operated by diaphragm/spring pneumatic actuator (DCL series) or by double action or spring return pneumatic piston actuators (PPR series).

Can also be supplied with electric actuator, lever or gearbox. Detailed information about actuators are given in specific bulletins.

## Actuators

## Dimensions



BODY SIZE (in.)	DIMENSIONS (mm)								
	87-01, 87-02, and 87-11 Types			87-51, 87-52, and 87-61 Types					
	Class 150			Class 150			Class 300/600		
	A	B	C	A	B	C	A	B	C
2	43	63	97	43	92	109	43	92	109
3	46	80	120	48	105	129	48	105	129
4	52	96	150	54	130	154	54	130	154
6	56	130	177	56	130	177	59	179	212
8	60	150	204	60	150	204	73	201	234
10	68	178	260	68	178	260	83	250	292
12	78	205	329	78	205	329	92	285	366
14	78	220	345	78	220	345	117	299	353
16	102	251	345	102	251	345	133	353	398
18	114	278	367	114	278	367	149	377	422
20	127	312	417	127	312	417	159	431	485
24	154	360	464	154	360	464	181	479	533
28	185	505	550	—	—	—	—	—	—

BODY SIZE (in.)	DIMENSIONS (mm)			
	ACTUATOR	D	ACTUATOR	D
2	DCL 02	123	PPR 02	167
	DCL 06		PPR 03	191
3	DCL 02	123	PPR 02	167
	DCL 06		PPR 03	191
4	DCL 02 <sup>(1)</sup>	123	PPR 02 <sup>(1)</sup>	167
	DCL 06 <sup>(1)</sup>			
	DCL 08			
6	DCL 08	153	PPR 03	191
	DCL 09	183	PPR 04	223
8	DCL 08	153	PPR 03	191
	DCL 09	183	PPR 04	223
10	DCL 09	183	PPR 03	204
	DCL 10	223	PPR 04	236
12	DCL 09	183	PPR 03	204
	DCL 10	223	PPR 04	236
14	DCL 09	183	PPR 03	204
	DCL 10	223	PPR 04	236
16	DCL 09	183	PPR 04	236
	DCL 10	223	PPR 05	290
18	DCL 09	183	PPR 04	236
	DCL 10	223	PPR 05	290
20	DCL 10	223	PPR 04	245
			PPR 05	297
24	DCL 10	223	PPR 04	245
			PPR 05	297
28	—	—	PPR 05	388

(1) Only for 87-01, 87-02 and 87-11 types.

## Ordering information

1. Valve size and type
2. Body material
3. Trim material
4. Packing material
5. Maximum working condition
6. Normal working condition
7. Minimum working condition
8. Shutoff differential pressure
9. Specific gravity
10. Specific heat ratio
11. Critical pressure
12. Critical temperature
13. Viscosity
14. Inlet and outlet pipe diameter and thickness.

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