Series 9210
High Performance Butterfly Valves for ANSI 150-300 DIN/BS 4504 PN10-PN40

Series 9210 Features

General

The series 9210 butterfly valve has been developed for a large number of applications throughout process industries.
The series 9210 high performance butterfly valve is mainly used for the control of fluids flowing in large pipe at low differential pressure. It offers additional advantages such as simple structure and low cost.

Performance:

- High Cv to valve weight ratio compared to conventional control valves.
- Throttling controls 60° rotation, on-off controls 90° rotation.
- Excellent control rangeability.

Design Flexibility:

- Swing through and tight shut-off seated trim design.
- Flange connection versions available.
- Full range of bonnet and packing design to suit various temperatures and fluids.
- Provides fire safe sealing, which combines a soft seal ring and metal seal ring.
- Full range of body and vane material options, with availability of hard facings.

Design Integrity:

- Wafer type as standard.
- Double eccentric mechanism.
- Actuator mounting flange dimensions in accordance with ISO 5211/1-1977.

Figure 1. Series 9210 Butterfly Valve

Butterfly Valve Specifications

Valve Type	Diaphragm/Cylinder Operated Butterfly Control Valve											
Valve Model	Series 9210											
Body Type	High Performance/Damper/TFE Lining/Rubber Lining											
Valve Size (inch)	3	4	5	6	8	10	12	14	16	18	20	24
(mm)	80	100	125	150	200	250	300	350	400	450	500	600
Pressure Rating	ANSI 150# ~ 300# (JIS 10K ~ 20K, PN 10~ 25)											
End Connection	WF, RF, FF											
Body Materials	A216WCB, A351CF8/CF8M											
Bonnet Type	Plain(-17°C to 230°C), Extension(-45°C to -17°C, over 230°C), Cryogenic(-196°C to -45°C)											
Packing	Teflon, EPDM											
Gasket	Graphite											
Guiding	Bushing											
Seat Type	Metal/Soft											
Valve Plug Shapes	VANE											
Plug Characteristic	Inherent											
Trim Materials	A351CF8/CF8M, A351CF3/CF3M, and so on											

Quality manufacturing:

- Rigorously tested to ensure specified performance on site.
- Quality assurance system in accordance with ISO 9001.

Scope of Design:

End Connection Sizes:
3” to 24” (80mm to 600mm) nominal size

End Connection Styles:

ANSI, DIN and BS wafer are standard, other requirements available on requested.

Valve Body Ratings:

ANSI 150 to 300, BS 9504, PN10 to PN25.

Max. Working Temperature:

Up to 450 ℃

Face to Face Dimensions:

In accordance with ISO 5752-1982

Trim Design Options:

The vane with swing through or fire safe seating

Inherent Characteristics:

Modified equal percentage

Standard Material Combinations:

These are shown in table 1.

Special Applications:

For arduous service other material combinations, hard facings on valve bore and vane are available.

Actuation:

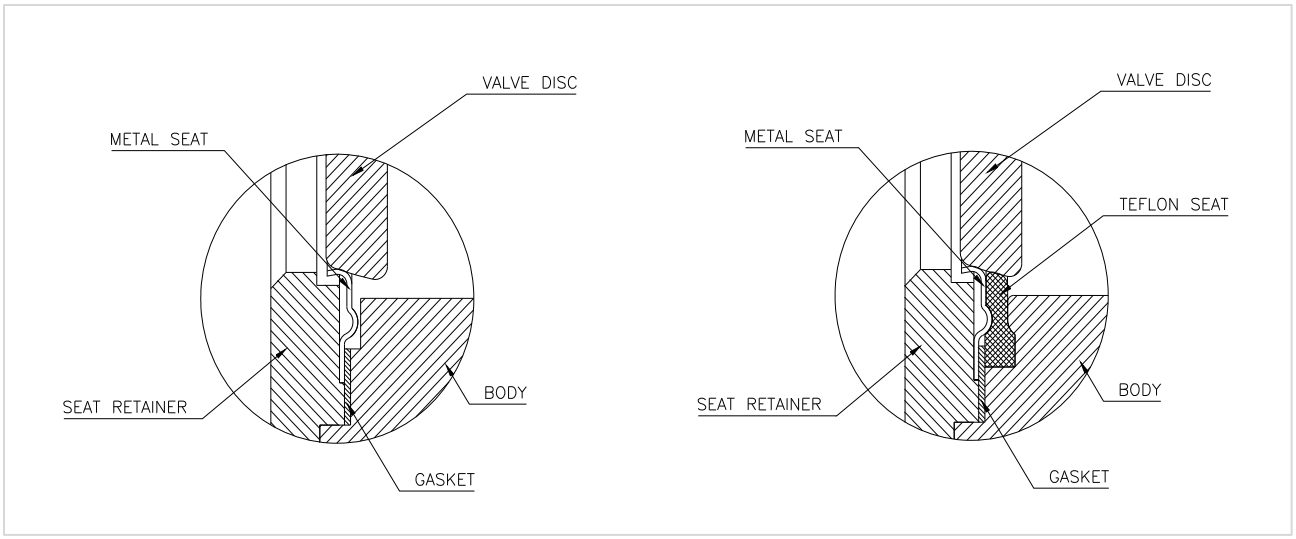
Various types of actuation are available including 6100 series spring opposed pneumatic diaphragm. 6200 series double acting, or spring opposed pneumatic piston. In addition electric, electro hydraulic, hydraulic and manually operated versions are available.

Sizing/Noise Predication:

The procedures for performing valve sizing, velocity and sound pressure level calculations are detailed in the technical selection manual.

Table 1. Standard material construction

Valve body	Carbon steel ASTM A216 WCB	Stainless steel ASTMA351 CF8	Stainless steel ASTMA351 CF8
Vane	Carbon steel ASTM A216 WCB (hard Cr. Plated)	Stainless steel ASTMA351 CF8	Stainless steel ASTMA351 CF8
Shaft	Stainless steel 17-4PH	Stainless steel 17-4PH	Stainless steel 316SS
Inboard bearing	Oil less bearing	Oil less bearing	Oil less bearing
Packing	Teflon fiber	Teflon fiber	Teflon fiber
Packing follower and steel	Stainless steel	Stainless steel	Stainless steel
Seat ring	Stainless steel 316SS	Stainless steel 316SS	Stainless steel 316SS
Soft seat ring	Reinforced Teflon	Reinforced Teflon	Reinforced Teflon



Metal Seat Type

Soft Seat Type

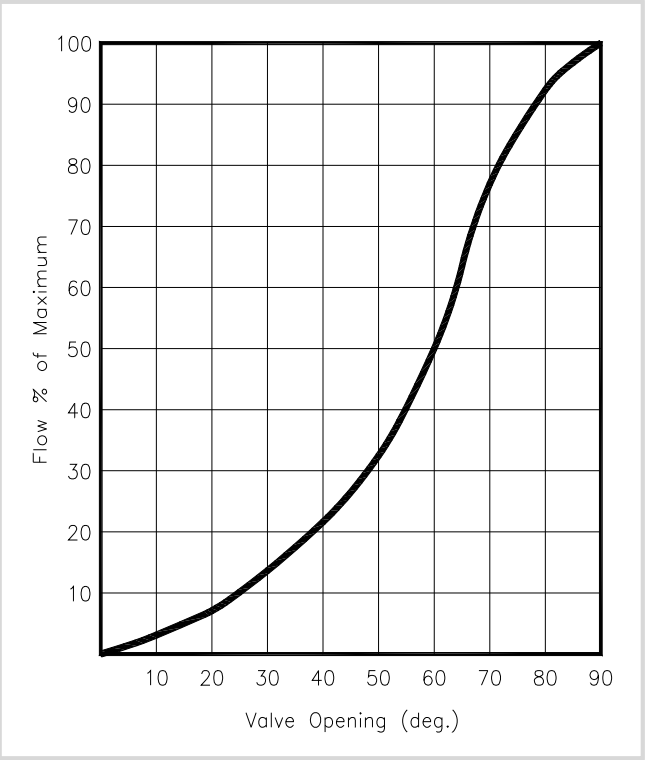
Figure 2. Sealing Design

Cv Values

Table 2. Cv Values

Valve Size		Throttling 60	On-Off 90
inch	mm		
3”	80A	160	320
4”	100A	280	560
5”	125A	450	900
6”	150A	640	1280
8”	200A	1150	2300
10”	250A	1780	3560
12”	300A	2600	5200
14”	350A	3400	6800
16”	400A	4500	9000
18”	450A	5600	11200
20”	500A	7000	14000
24”	600A	12000	24000

Figure 3. Characteristic Curve



ΔP LIMITATION FOR BUTTERFLY VALVE

Series 6100 ROTARY DIAPHRAGM ACTUATOR

SUPPLY AIR : 4.0 kgf/cm^{2}G.
SPRING RANGE : 1~3 kgf/cm^{2}G.

(Unit: kgf/cm^2)

ACTUATOR SIZE	T-3	T-4	T-5
TORQUE (kgf-m)	**23**	**64**	**108**
3"	32		
4"	32		
5"	20		
6"	20		
8"	11.5	20	
10"	5	20	
12"		14.4	20
14"		8.9	12.6
16"		4.8	9.4
18"		3.6	6
20"			5.1
24"			2.7

ΔP LIMITATION FOR BUTTERFLY VALVE

Series 6200 Double Acting Cylinder Actuator

SUPPLY AIR : 5.0 kgf/cm^{2}G

(Unit: kgf/cm^2)

ACTUATOR SIZE	8D	10D	12D	14D	16D	17D	20D	25D	30D	35D	40D
TORQUE (kgf-m)	13.5	21.1	48.9	70.4	140.8	274.2	428.6	740.8	1543.7	2101.2	4036.5
3”	20										
4”	20										
5”	15.7	20									
6”		20									
8”		10	20								
10”			15.2	20							
12”				12.9	20						
14”					20						
16”					16.9	20					
18”						20					
20”						20					
24”						8.1	14.4	20			

ΔP LIMITATION FOR BUTTERFLY VALVE

Series 6200 Spring Return Cylinder Actuator

SUPPLY AIR : 5.0 kgf/cm^{2}G.

SPRING RANGE : 2~3 kgf/cm^{2}G

(Unit: kgf/cm^2)

ACTUATOR SIZE	8S	10S	12S	14S	16S	17S	20S	25S	30S
TORQUE (kgf-m)	5.4	8.6	19.6	28.4	42.5	54.8	128.8	222.2	463.1
3"	15.4	20							
4"		17.6	20						
5"			20						
6"			18.3	20					
8"				15.6	20	20			
10"					12.6	17.5			
12"							20		
14"							20		
16"							11.5	20	
18"								16.4	20
20"									17.1
24"									14.2

Actuator Sizing for Butterfly Valve

Series 6200 Cylinder Actuator

Body Size	Seat	Max. Shut of Pressure (5K)		Max. Shut of Pressure (10K)	
		Spring Return	Double Acting	Spring Return	Double Acting
3”	Metal	AC06S	AC06D	AC06S	AC06D
	Soft	AC06S	AC06D	AC06S	AC06D
4”	Metal	AC06S	AC06D	AC08S	AC06D
	Soft	AC06S	AC06D	AC08S	AC06D
5”	Metal	AC06S	AC06D	AC10S	AC08D
	Soft	AC08S	AC06D	AC10S	AC08D
6”	Metal	AC08S	AC06D	AC10S	AC08D
	Soft	AC08S	AC06D	AC10S	AC08D
8”	Metal	AC10S	AC08D	AC12S	AC10D
	Soft	AC08S	AC08D	AC12S	AC10D
10”	Metal	AC12S	AC10D	AC14S	AC12D
	Soft	AC10S	AC08D	AC14S	AC12D
12”	Metal	AC14S	AC10D	AC16S	AC12D
	Soft	AC12S	AC10D	AC16S	AC12D
14”	Metal	AC16S	AC12D	AC25S	AC14D
	Soft	AC16S	AC12D	AC20S	AC14D
16”	Metal	AC20S	AC14D	AC25S	AC16D
	Soft	AC20S	AC14D	AC25S	AC16D
18”	Metal	AC30S	AC16D	AC25S	AC20D
	Soft	AC25S	AC16D	AC25S	AC20D
20”	Metal	AC30S	AC16D	AC30S	AC20D
	Soft	AC25S	AC16D	AC30S	AC20D
24”	Metal	AC30S	AC20D	AC30S	AC25D
	Soft	AC30S	AC20D	AC30S	AC25D

Ask technical Dept. for matching of bigger valve.
Honeywell’s standard butterfly valve only
Matching of other maker’s valve should be changed suitably.
Select a size bigger actuator for control purpose.

Actuator Type Verification

Code	Actuator Type
S	Spring Return Single Cylinder
D	Double Acting Single Cylinder

Dimension

Figure 4. Series 9210 High Performance butterfly Valve

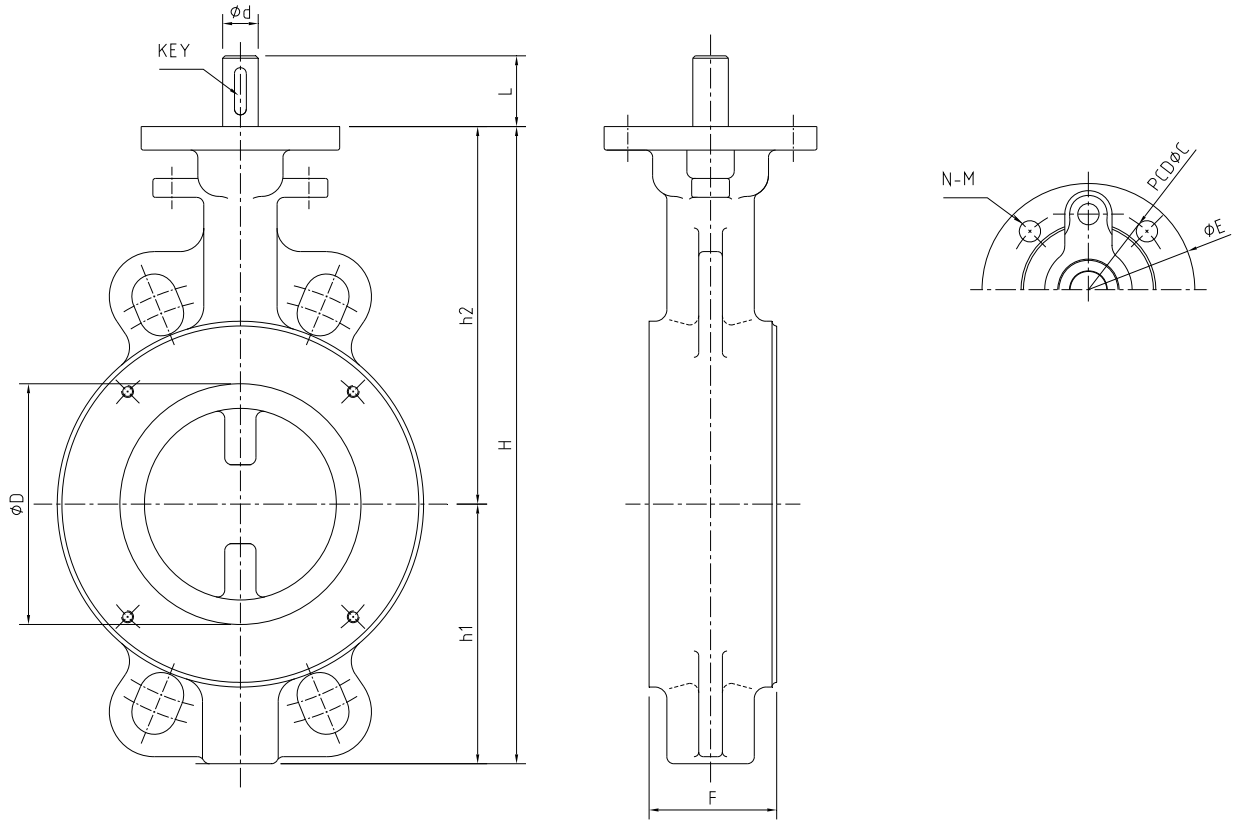
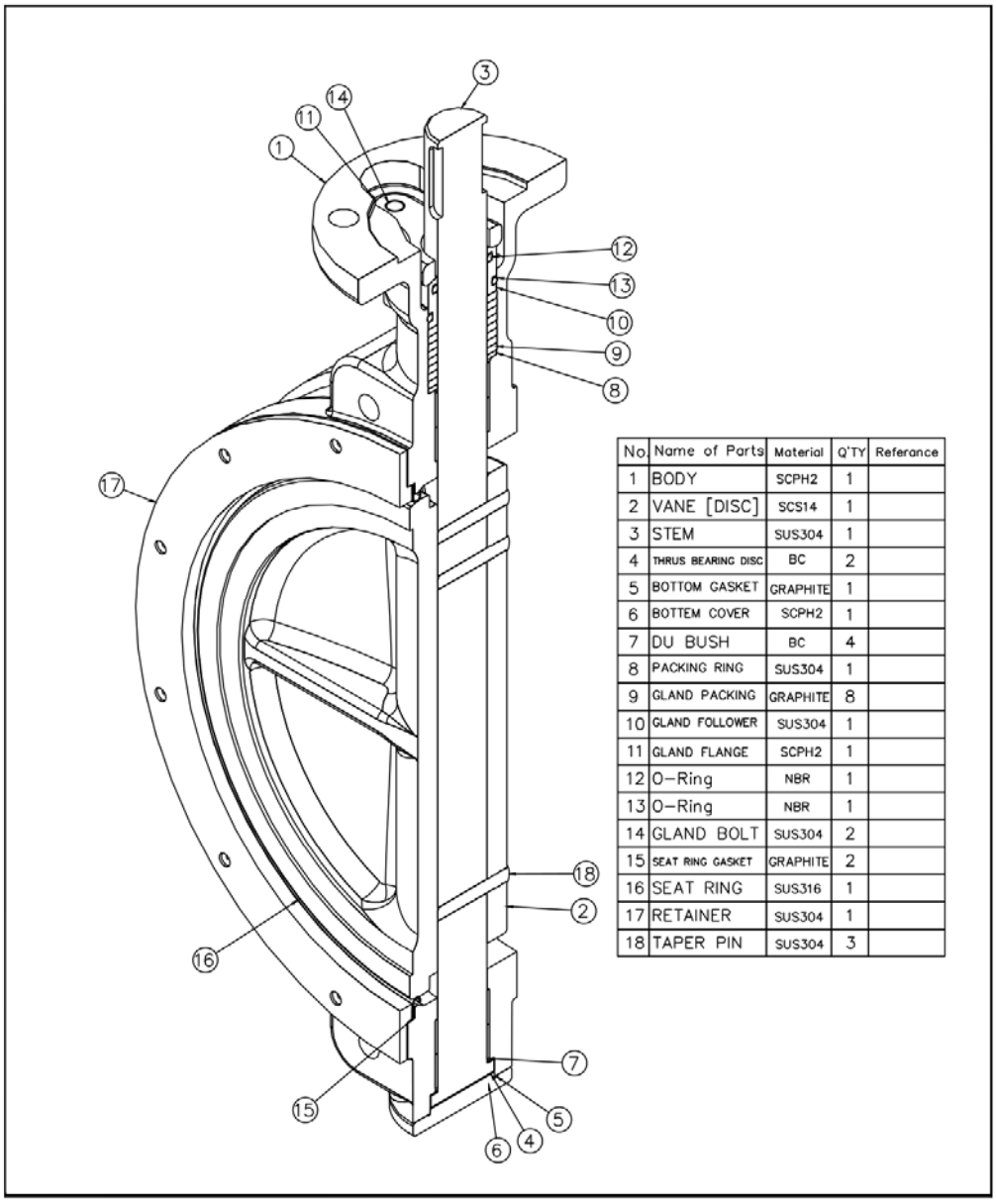


Table 3. Dimensions

Size		F		h1	h2	H	ØD	Ød	KEY	L	PCD ØC	ØE	N-M	ISO. BASE
inch	mm	150#	300#											
3”	80A	46	46	134	138	272	80	15	5x5x20L	70	70	90	4-M8	F07
4”	100A	52	52	139	150	289	102	15	5x5x20L	70	70	90	4-M8	F07
5”	125A	56	56	161	175	336	127	20	6x6x30L	85	102	125	4-M10	F10
6”	150A	57	57	189	203	392	150	25	8x7x30L	85	102	125	4-M10	F10
8”	200A	64	64	219	233	452	200	25	8x7x30L	85	125	150	4-M10	F12
10”	250A	71	71	254	266	520	250	30	10x8x40L	110	125	150	4-M10	F12
12”	300A	81	81	289	313	602	298	35	10x8x40L	110	140	175	4-M16	F14
14”	350A	92	117	331	364	695	350	35	10x8x40L	110	140	175	4-M16	F14
16”	400A	102	133	363	394	757	400	45	14x9x50L	130	165	210	4-M16	F16
18”	450A	114	149	393	424	817	450	45	14x9x50L	130	165	210	4-M16	F16
20”	500A	127	159	400	435	835	500	45	14x9x50L	130	165	210	4-M16	F25
24”	600A	154	181	460	495	955	598	55	16x10x50L	130	165	210	4-M16	F25



No.	Name of Parts	Material	Q'TY	Referance
1	BODY	SCPH2	1	
2	VANE [DISC]	SCS14	1	
3	STEM	SUS304	1	
4	THRUS BEARING DISC	BC	2	
5	BOTTOM GASKET	GRAPHITE	1	
6	BOTTEM COVER	SCPH2	1	
7	DU BUSH	BC	4	
8	PACKING RING	SUS304	1	
9	GLAND PACKING	GRAPHITE	8	
10	GLAND FOLLOWER	SUS304	1	
11	GLAND FLANGE	SCPH2	1	
12	O-Ring	NBR	1	
13	O-Ring	NBR	1	
14	GLAND BOLT	SUS304	2	
15	SEAT RING GASKET	GRAPHITE	2	
16	SEAT RING	SUS316	1	
17	RETAINER	SUS304	1	
18	TAPER PIN	SUS304	3	

Figure 5. Body Assembly Diagram

Warranty / Remedy

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