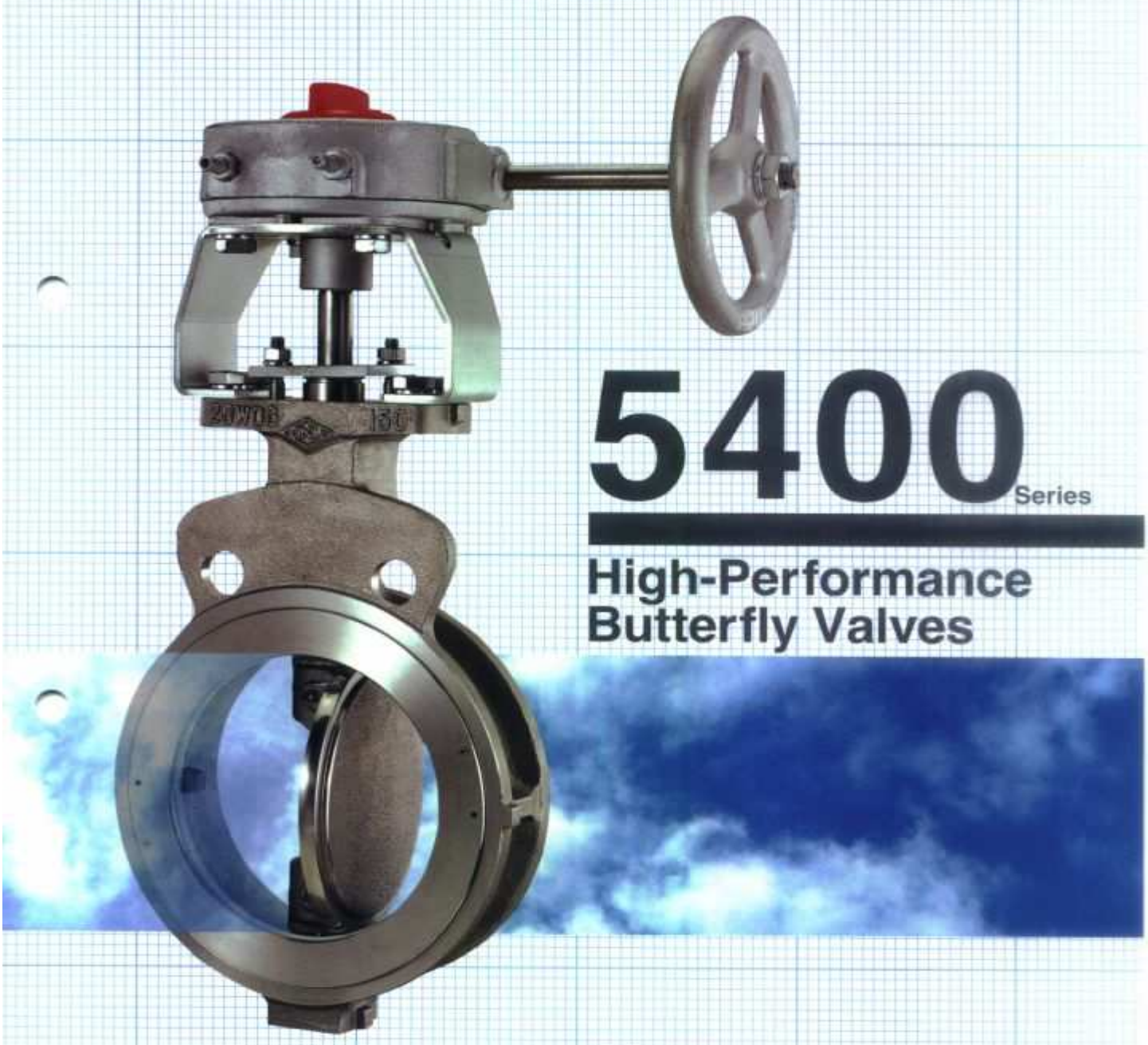
OKM

ISO9001

JAB

Our Butterfly Valves have received a registration number(JSC9001) which certifies that our products meet international quality standard requirements.



5400 Series

High-Performance Butterfly Valves

OKUMURA ENGINEERING corp.

A leading-edge butterfly for high-performance flow cont

The OKUMURA 5400 Series is a high-performance butterfly valve designed for extreme temperature, high pressure and vacuum conditions that are unsuitable for conventional universal butterfly valves. The 5400 Series features a self-sealing seat ring, double eccentric disc, and a choice of three seat rings. It outperforms ball valves and gate valves and can perfectly seal fluids such as corrosive slurry and high-pressure steam.

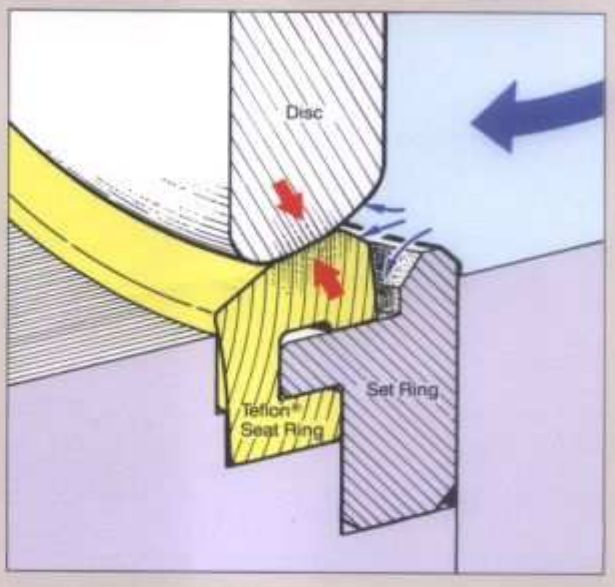
HIGH PERFORMANCE

OKUMURA 5400 Series

Approved by Japanese government agency for high-pressure gas.

Self-sealing mechanism ensures tight shutoff.

As illustrated below, fluid pressure to the disc and seat ring ensures a secure seal; in other words, the higher the pressure, the better the sealing performance. The sealing performance remains unchanged even when the flow direction changes from one way to the other.



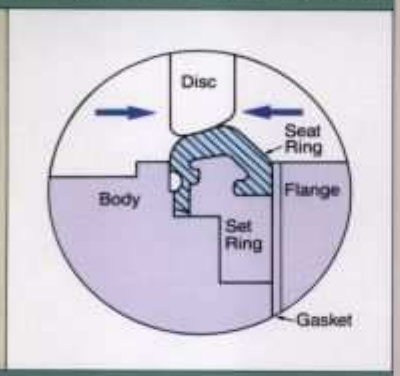
valve rol at: Maximum working pressure of 2.0 MPa (20 bar) Service temperature range −50°C t

Three types of seat rings to cover a wide variety of applications.

Seat rings of synthetic rubber, Teflon® and metal are available for effective control of any type of fluid, from slurry/sludge and chemical solutions to high-pressure steam.

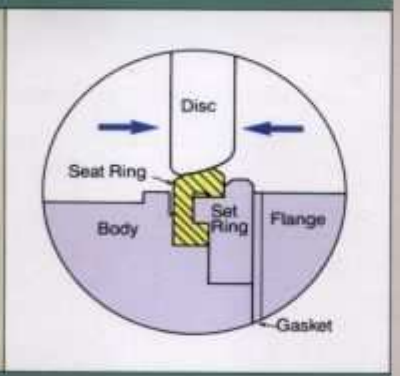
5421 Synthetic Rubber Seat Ring
FPM 150°C (302°F), EPDM 120°C (248°F)

The synthetic rubber seat ring is ideal for abrasive solid-laden fluids and high-temperature fluids of up to 150°C (302°F). (eg. water, compressed air, crude oil, food stuffs, slurry, sludge) which are difficult to control with conventional butterfly valves.



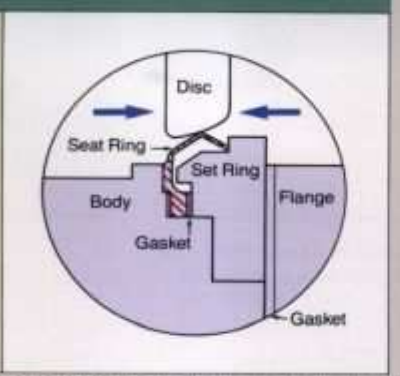
5422 Teflon® Seat Ring
PTFE −50°C to 230°C (−58°F to 446°F)

The Teflon® seat ring is designed to withstand extremely corrosive chemical solutions and high-temperature fluids of up to 230°C (446°F). (eg. demineralized water, air-conditioning chilled/hot water, sea water, white liquor, formaldehyde solution, organic solvent, compressed air, oxygen, exhaust gas, town gas, coke-oven gas)

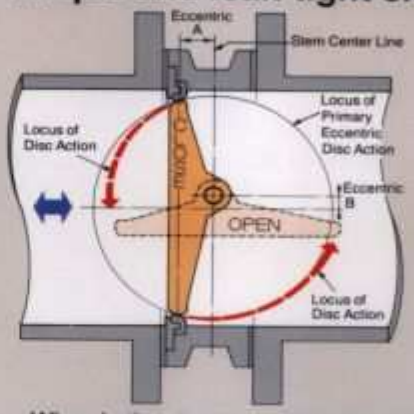


5423 Metal Seat Ring
SUS316 450°C (842°F)

The metal seat ring allows control of extremely high-temperature fluids, and replaces conventional gate valves, globe valves, and ball valves. (eg. steam, compressed air, combustion gas, exhaust gas, sulfurous-acid gas, nitrogen gas)

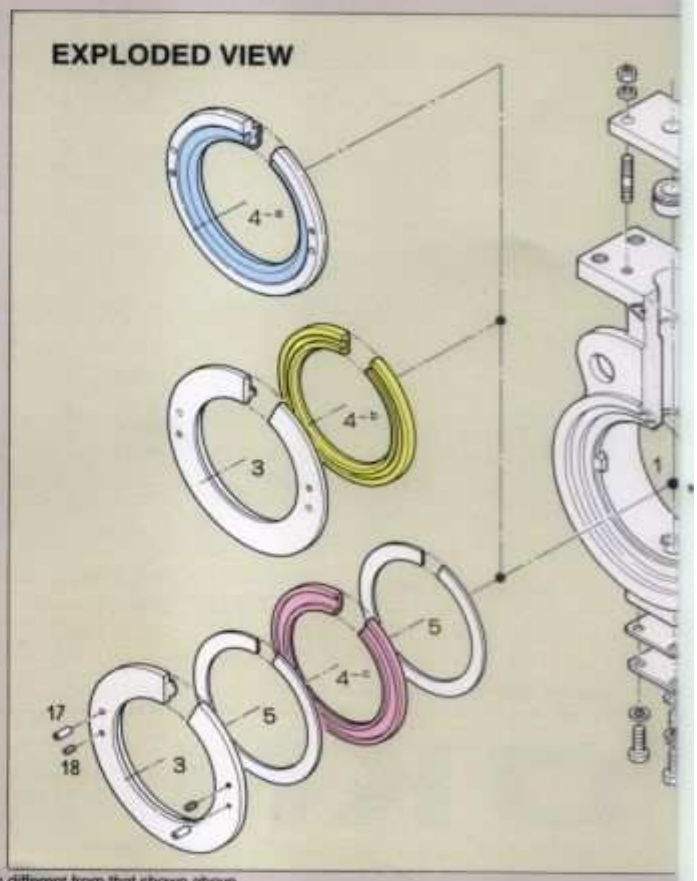


Double eccentric disc ensures longer service life, low seating torque and leak-tight shutoff.



Since the stem is eccentric from the seat ring (as indicated by A and B), the disc is in contact with the seat ring only when the valve is completely closed. The benefits from the double eccentric disc design include:

- Longer service life due to hard-to-wear seat ring.
- When in the closed position, the force of the disc on the seat ring ensures complete sealing.
- Easy operation with less seating torque.
- The offset stem design allows easy replacement of the seat ring without removing the stem.



* When the valve is used under high temperature and high pressure, the direction of flow is different from that shown above.
* Joint sheets are recommended for use as piping gaskets. Contact us for details.
* If the valve is installed at the end of a pipe line, counter flange should be installed on the other side of the valve.

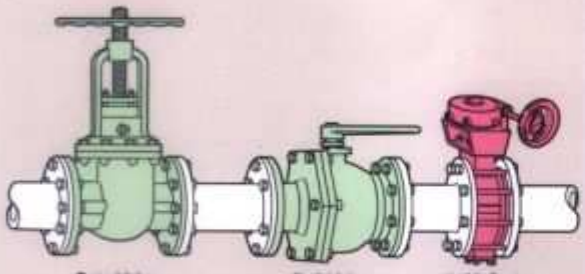
of

o 450°C (−58°F to 842°F)

5400 SERIES

Compact, lightweight, and cost-effective

Employing a slim wafer body, the 5400 Series is significantly smaller and lighter than gate valves or ball valves, thus greatly simplifying piping work.

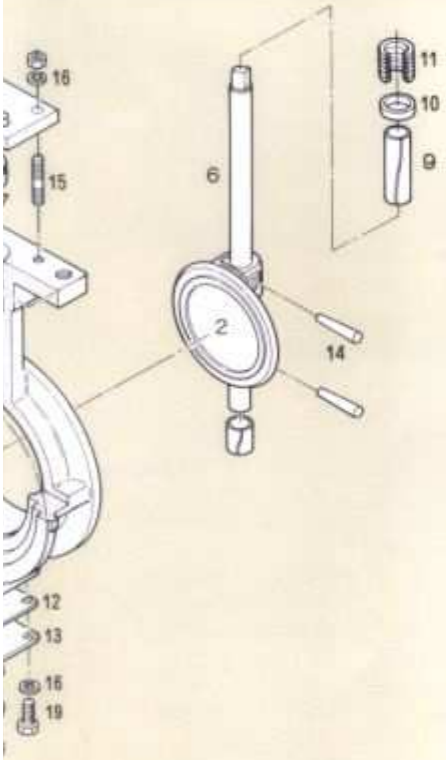


Gate Valve | Ball Valve | 5400 Series Butterfly Valves

Standard Specifications

Model Designation	5421	5422	5423
Seat Ring	Synthetic rubber	Teflon®	Metal
Size Range	80mm to 600mm[1] (3" to 24")	50mm to 600mm[2] (2" to 24")	80mm to 600mm[1] (3" to 24")
Face to Face	ISO 5752 Wafer Short		
Applicable Flange[3]	JIS 10/16/20, ISO PN10/16/20, ANSI 150Lbs, etc.		
Maximum Working Pressure	2.0 MPa (for synthetic rubber or Teflon® seat ring, vacuum applicable to 5 Torr)		
Service Temperature Range	FPM −10°C to 150°C (14°F to 302°F) EPDM −20°C to 120°C (−4°F to 248°F)	PTEE −50°C to 230°C (−58°F to 446°F)	SUS316 max. 450°C (842°F)
Seat Leakage	None	None	Tight Shut[4]
Hydrostatic Shell Test	10 W.O.G. 1.5 MPa /20 W.O.G. 3.0 MPa		
Hydrostatic Seat Test	10 W.O.G. 1.1 MPa /20 W.O.G. 2.2 MPa		
Actuator	Lever Handle, Worm-gear, Pneumatic Cylinder, Electric Motor		
High-temperature Specifications	Contact us if the operating fluid temperature exceeds 230°C (446°F).		

1: 550 mm is not available.
2: In 10 W.O.G., up to 900 mm is available.
3: Contact us regarding use of JIS 5K.
4: Conforms to MSS SP-61 standard.



Standard Materials

Part No.	Part Name	Material
1	Body	SCPH2, SCS13[1]/14[2]
2	Disc[3]	SCS13[1]/14[2]
3	Set Ring	SUS304 80mm to 600mm (3" to 24")
		SUS316 50mm to 65mm (2" to 2.5")
4a	Seat Ring (5421)	FPM, EPDM
4b	Seat Ring* (5422)	PTFE (white), PTFE (black)
4c	Seat Ring (5423)	SUS316 (plated)
5	Gasket	Fiber
6	Stem	SUS630 or SUS316 (for 10 W.O.G. only)
7	Gland	SUS316
8	Gland Flange	Mild-steel (plated)
9	Bush[5]	SUS316L, PTFE

Part No.	Part Name	Material
10	Packing Washer	SUS316
11	Gland Packing[5]	PTFE
12	Gasket	Fiber
13	Cover	SUS316
14	Taper Pin	SUS630 or SUS316 (for 10 W.O.G. only)
15	Gland Bolt and Nut	SUS316
16	Spring Washer	SUS316
17	Set Pin	SUS420
	50mm to 300mm (2" to 12")	
	Setscrew	SUS316
	350mm to 600mm (14" to 24")	
18	Draw-out Screw	SUS316
19	Cover Bolt	SCM435

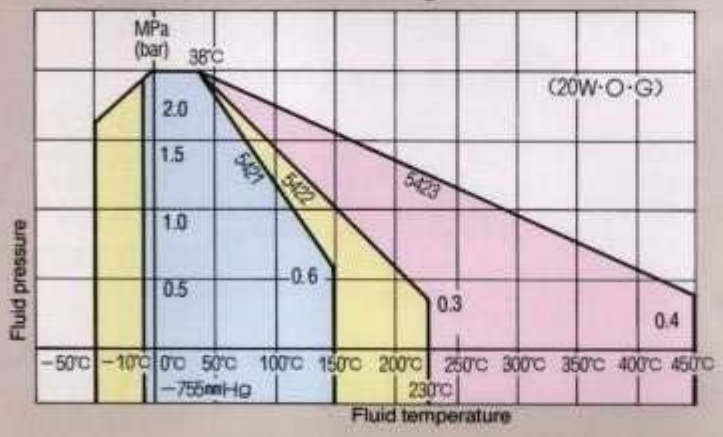
1: Size range: 80 mm to 600 mm
2: In 50 mm and 60 mm sizes, Teflon® and SCS14 only.
3: Plating for 5423 only.
4: Contact us for models with high polymer polyethylene seats.
5: Contact us if using model 5423 at a high temperature exceeding 230°C(446°F)

JIS/ASTM code equivalents: JIS SCPH2 equivalent to ASTM A216 GrWCB
JIS SCS13 equivalent to ASTM A351 CF8
JIS SCS14 equivalent to ASTM A351 CF8M

* Teflon® is a registered trademark of E.I.du Pont de Nemours & Company.

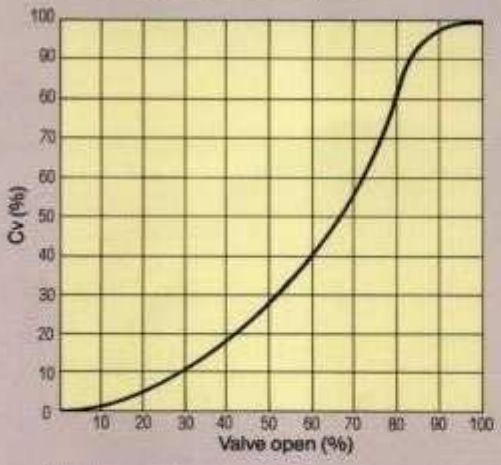
Technical Data

• Temperature and Pressure Ratings



Note:
1. If the fluid temperature is 230°C or above, insulate the valve body.
2. Contact us regarding specifications for extremely low temperatures, degree of vacuum, and borderline ratings.

• Flow Characteristics Curve



* The chart shows the flow characteristics curve at 200 mm size (8").

• Cv Valves with Valve Fully Open

Size	10/20 W.O.G.
* 50mm	60
* 65mm	100
80mm	190
100mm	380
125mm	730
150mm	1250
200mm	2400
250mm	4000
300mm	5800
350mm	7600
400mm	9200
450mm	11900
500mm	14200
* 550mm	17000
600mm	21700

*Model 5422 only

Please provide us with the following information when ordering:

1. **Fluid Name and Composition** ☐
2. **Fluid Pressure** ☐ MPa
3. **Temperature** ☐ °C
4. **Flowrate** ☐ m³/h
5. **Flow Velocity** ☐ m/Sec.
6. **Open/close Frequency** ☐
7. **Open/close Time** ☐ Sec.
8. **Motor Power Source** AC ☐ V ☐ Hz ☐
9. **Control Power Source** AC ☐ V ☐ Hz ☐
10. **Supplied Air Pressure** ☐ MPa

*Use two gasket packings when installing.

Nomenclature

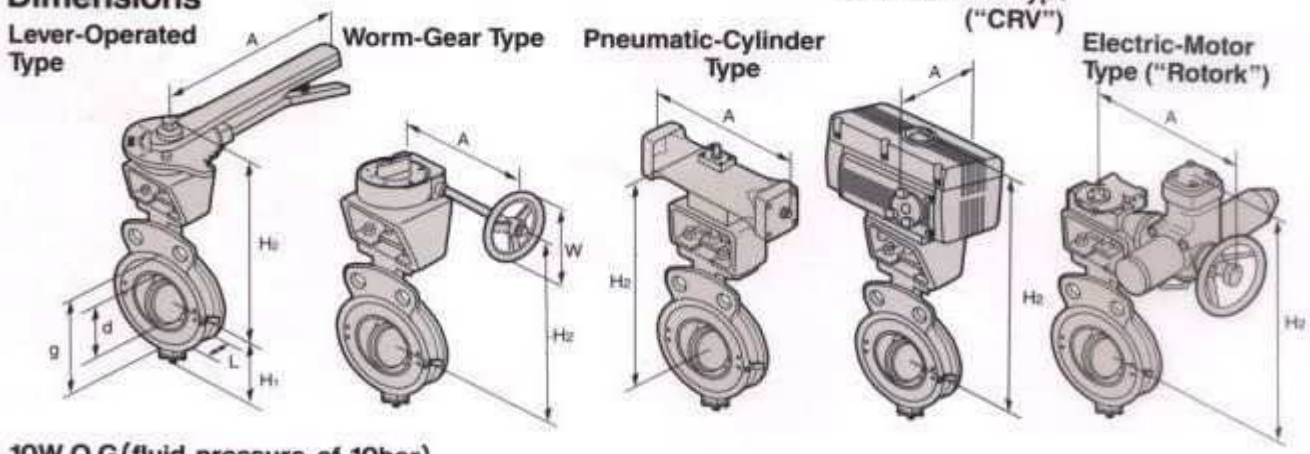
☐-542☐-☐

3: Lever-Operated Type
4: Worm-Gear Type

1: Rubber Seat Ring
2: Teflon® Seat Ring
3: Metal Seat Ring

C: Pneumatic-Cylinder Type
M: Electric-Motor Type

Dimensions



10W.O.G(fluid pressure of 10bar)

Size		L	d	g	H_1	Lever-Operated Type			Worm-Gear Type				Pneumatic-Cylinder Type			Electric-Motor Type("CRV")			Electric-Motor Type("Rotork")		
inch	mm					H_2*	A	Weight	H_2*	A	W	Weight	H_2*	A	Weight	H_2*	A	Weight	H_2*	A	Weight
2	50	43	40	94	67	249	260	4.0	228	141	100	5.8	348	234	7	376	138	13	—	—	—
2½	65	46	55	108	74	264	260	5.0	243	141	100	6.8	363	234	10	391	138	14	—	—	—
3	80	46	70	125	82	272	260	8.0	252	182	125	10	402	284	12	399	138	15	—	—	—
4	100	52	94	155	92	282	260	9.0	262	182	125	12	412	284	13	409	138	16	—	—	—
5	125	56	119	180	119	332	360	15.0	304	211	160	17	491	362	20	461	138	19	—	—	—
6	150	56	144	209	132	345	360	18.0	317	211	160	19	504	362	22	474	138	21	—	—	—
8	200	60	195	265	169.5	—	—	—	349	255	200	35	547	416	36	508	106	29	723	392	70
10	250	68	244	319	224	—	—	—	407	335	315	58	656	516	66	567	106	39	683	392	77
12	300	78	293	367	259	—	—	—	459.5	335	315	72	700	516	80	—	—	—	718	392	90
14	350	78	328	413	313	—	—	—	522	320	315	103	814	664	158	—	—	—	770	416	130
16	400	102	366	470	343	—	—	—	572	320	315	141	864	664	193	—	—	—	820	416	170
18	450	114	415	534	375	—	—	—	620	392	450	196	936	755	247	—	—	—	868	543	220
20	500	127	463	584	409	—	—	—	681	392	450	233	1,072	1,060	325	—	—	—	936	587	270
22	550	154	518	643	429	—	—	—	722	392	450	293	1,112	1,060	367	—	—	—	977	587	320
24	600	154	570	692	479	—	—	—	772	392	450	348	1,162	1,060	442	—	—	—	1,055	526	400

20W.O.G(fluid pressure of 20 bar)

Size		L	d	g	H_1	Lever-Operated Type			Worm-Gear Type				Pneumatic-Cylinder Type			Electric-Motor Type("CRV")			Electric-Motor Type("Rotork")		
inch	mm					H_2*	A	Weight	H_2*	A	W	Weight	H_2*	A	Weight	H_2*	A	Weight	H_2*	A	Weight
2	50	43	40	94	67	249	260	4.0	228	141	100	5.8	348	234	7	376	138	13	—	—	—
2½	65	46	55	108	74	264	260	5.0	243	141	100	6.8	363	234	10	391	138	14	—	—	—
3	80	46	70	125	82	272	260	8.0	252	182	125	10	402	284	12	399	138	15	—	—	—
4	100	52	94	155	92	282	260	9.0	262	182	125	12	412	284	13	409	138	16	—	—	—
5	125	56	119	180	119	332	360	15.0	304	211	160	17	491	362	20	461	138	19	—	—	—
6	150	56	144	209	132	345	360	18.0	317	211	160	19	522	420	26	489	106	24	—	—	—
8	200	60	195	265	169.5	—	—	—	349	255	200	35	598	516	46	508	106	29	723	392	70
10	250	68	244	319	224	—	—	—	407	335	315	58	656	516	66	—	—	—	674	416	90
12	300	78	293	367	259	—	—	—	477	320	315	79	762	664	134	—	—	—	725	416	101
14	350	78	328	413	313	—	—	—	530	331	355	122	844	755	160	—	—	—	770	543	140
16	400	102	366	470	343	—	—	—	580	331	355	160	970	1,060	255	—	—	—	835	587	205
18	450	114	415	534	375	—	—	—	620	392	450	196	1,012	1,060	297	—	—	—	875	587	240
20	500	127	463	584	409	—	—	—	790	513	560	255	1,072	1,060	325	—	—	—	970	576	315
22	550	154	518	643	429	—	—	—	820	549	630	340	1,235	1,360	480	—	—	—	1,005	576	365
24	600	154	570	692	479	—	—	—	870	549	630	375	1,285	1,360	585	—	—	—	1,055	576	400

* The height dimension is subject to change if fluid temperature is 300°C or above.

(Dimensions: mm, Weight: kg)

Warranty Period Our products are guaranteed for either a period of 18 months from shipment out of our factory or 12 months from trial operation, whichever is the shorter.

These specifications and designs are subject to change without prior notice.

OKUMURA ENGINEERING corp.

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Printed in japan

Towards Tomorrow With high technology Valve

OKM

ISO9001登録認定

5410
5420 Series

High Performance Butterfly Valve

OKUMURA ENGINEERING corp.

Maximum Working Pressure

1.0MPa •2.0MPa

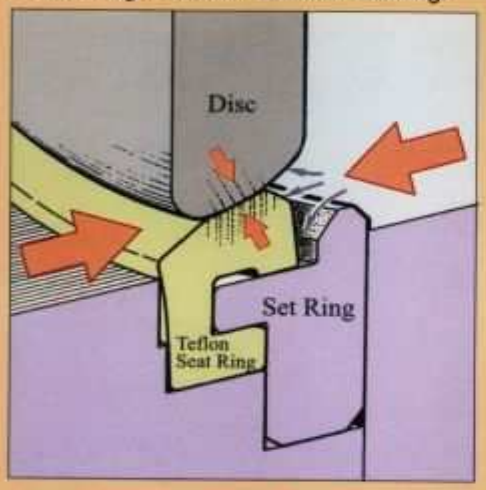
(5410 series) (5420 series)

Maximum Temperature Range

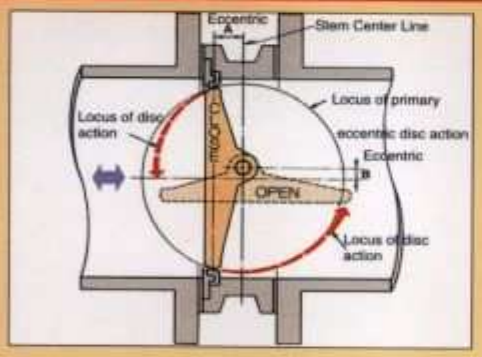
-50˚C ~ 450˚C High

1 Self-sealing mechanism ensures tight shut

A self-sealing mechanism ensures tight shut is achieved through the fluid pressure on both disc and seat ring. The higher the pressure, the better the sealing performance and giving a higher reliability valve. Whichever side the flow direction is from, this mechanism is applied to ensure a tight shut of disc and seat ring.



2 Double eccentric mechanism ensures longer service life and low seating torque



With the stem eccentricity to A and B, it is designed so that the disc and the seat ring only contact when the valve is fully closed. The advantages of this mechanism are:

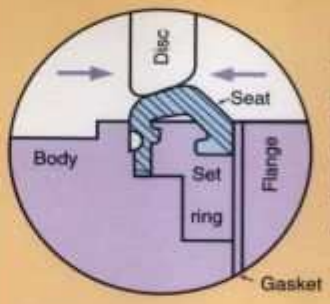
A. A double eccentric valve disc structure: Less friction between the disc and the seat ensure low torque and longer service life.

B. Easy seat ring replacement: By removing only the set pin, seat ring can be easily replaced on the spot.

3 Three types of seat rings for wide variety of applications

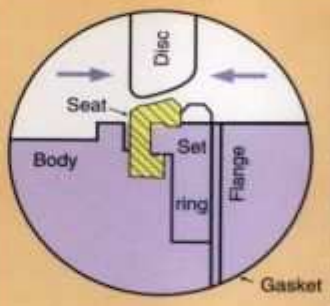
Synthetic rubber, Teflon and metal seat rings are available for controlled conditions applications for a wide type of fluids , from slurry or sludge, chemical solutions to high pressure steam.

541R 542R Synthetic Rubber Seat Ring



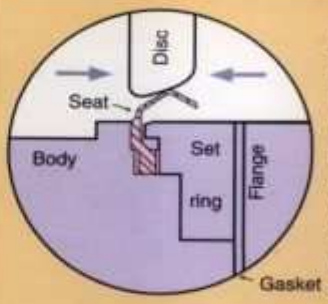
Suitable for high temperature fluids of up to 150˚C fluids and abrasive solid laden fluids which cannot be controlled by conventional butterfly valves
(Examples)
Water, compressed air, crude oil, food stuffs, slurry, sludge

541T 542T Teflon Seat Ring



Suitable for high temperature fluids of up to 200˚C and highly corrosive chemical solutions.
(Examples)
Demineralized water, air conditioning chilled/hot water, sea water, white water, formaldehyde solution, organic solvent, compressed air, oxygen, exhaust gas, town gas, coke-oven gas, steam and brine water.

541M 542M Metal Seat Ring



Suitable for higher temperature fluids that cannot be controlled by rubber and Teflon seat ring valves, it also is used as a replacement of gate valves, globe valves and ball valves.
(Example)
Steam, compressed air, combustion gas, exhaust gas, sulfur dioxide gas and nitrogen gas.

Performance is Guaranteed

Maximum Working Pressure 1.0 MPa

5410-Gear

5410-Cylinder

5410-Motorize

Maximum Working Pressure 2.0 MPa

5420-Gear

5420-Cylinder

5420-Motorize

■Standard Specification

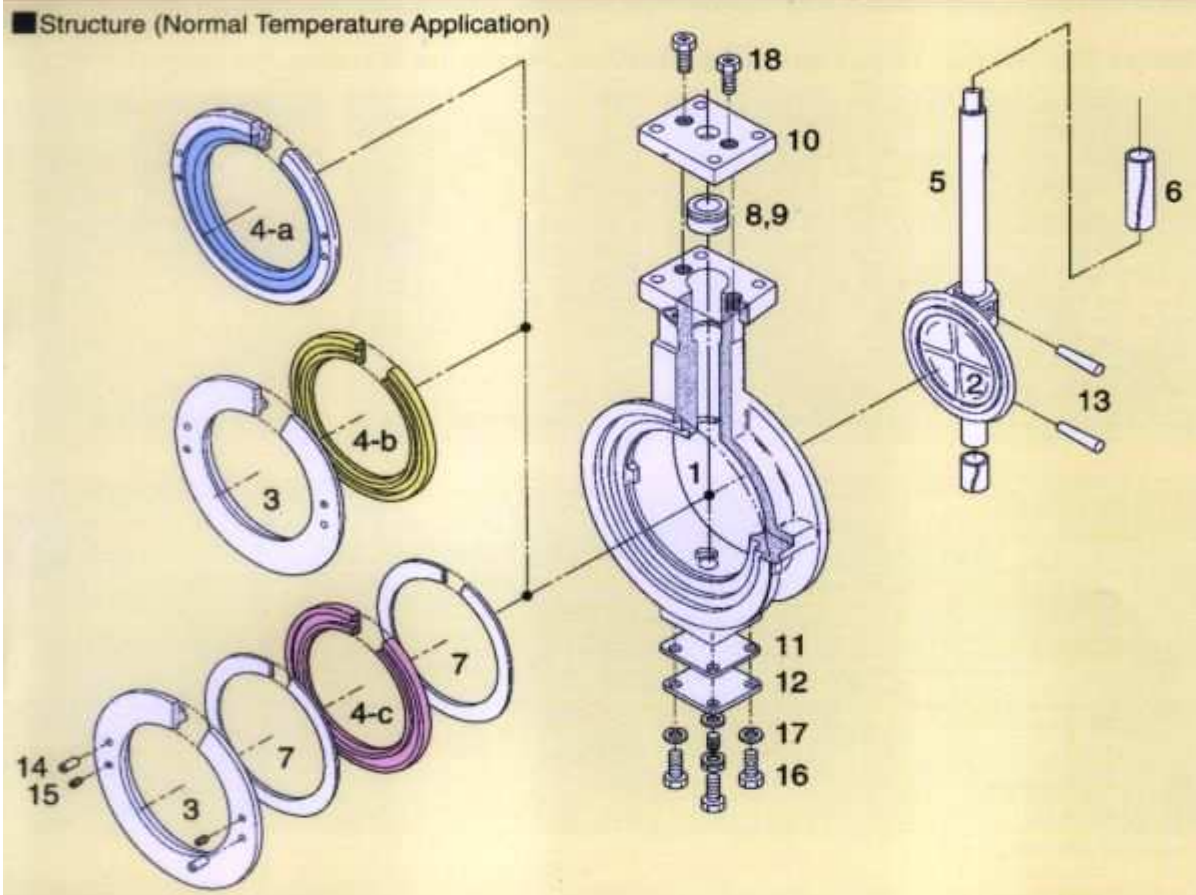
Model Designation		541R		541T	541M	542R		542T	542M
Seat Ring		Synthetic rubber		Telfon	Metal	Synthetic rubber		Teflon	Metal
Size Range		80 ~ 300		50 ~ 300	80 ~ 300	80 ~ 300		50 ~ 300	80 ~ 300
Applicable Flange		JIS 5K / 10K				JIS 10K/ 16K/ 20K ANSI 125/150Lb etc.			
Maximum Working Pressure		1.0 MPa				2.0 MPa			
Service Temperature		FKM	EPDM	PTFE	SUS316	FKM	EPDM	PTFE	SUS316
Range	Normal	-	0 ~ 120°C	0 ~ 120°C	0 ~ 120°C	-	0 ~ 120°C	0 ~ 120°C	0 ~ 120°C
	Low/High	-10 ~ 150°C	-	-50 ~ 230°C	MAX.450°	-10 ~ 150°C	-	-50 ~ 230°C	MAX.450°
Hydrostatic Shell Test		1.5 MPa				3.0 MPa			
Hydrostatic Seat Test		1.1MPa				2.2 MPa			
Face to Face		International Standard (ISO) Wafer Short							
Seat Leakage		Tight Shut		Tight Shut	Tight Shut*	Tight Shut		Tight Shut	Tight Shut*
Actuator		Lever-type, Gear-type, Cylinder-type, Motor-type							
Standard Coating		Lacquer coating Mansell N-5 (gray), No coating on stainless area							

* Conforms to MSS SP-61 Standard

Please contact us for details on valves with size range 350mm ~ 600mm.

5410 SERIES/5420 SERIES

■Structure (Normal Temperature Application)



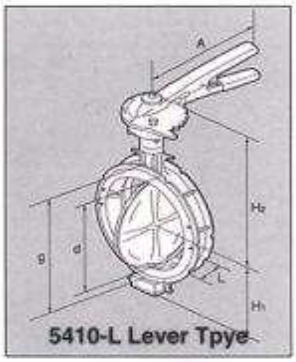
■Standard Material Table

Part No.		Part Name	5410 (Normal Temperature Application)		5420 (Normal Temperature Application)	
1		Body	SCS13A		SCS13A, FCD450	
2		Disc	SCS13A		SCS13A	
3		Set Ring	SUS304	SUS316	SUS304	SUS316
4	a	Rubber Seat Ring	FKM, EPDM		FKM, EPDM	
	b	Teflon Seat Ring	PTFE (White), PTFE (Black)		PTFE (White), PTFE (Black)	
	c	Metal Seat Ring	SUS316		SUS316	
5		Stem	SUS304		SUS630	
6		Bush	SUS316+PTFE		SUS316+PTFE	
7		Gasket	(541M) Non-asbestos		(542M) Non-asbestos	
8		Seal Ring	Plastic		Plastic	
9		O-Ring	FKM		FKM	
10		Plate	SUS304		SUS304	
11		Lower Gasket	Non-asbestos		Non-asbestos	
12		Cover	SUS304		SUS304	
13		Taper Pin	SUS304		SUS630	
14		Set Pin	SUS420		SUS420	
15		Setscrew	SUS304		SUS304	
16		Cover Bolt	SUS304		SUS304	
17		Spring Washer	SUS304		SUS304	
18		Cover Setscrew	SUS304		SUS304	

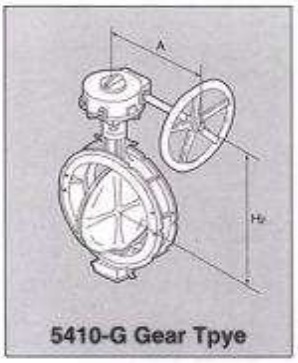
* Teflon is a registered trademark of Mitsui Dupont Fluoro Chemical Company and Dupont Company.

Dimension and Weight Table Shape vary according to sizes

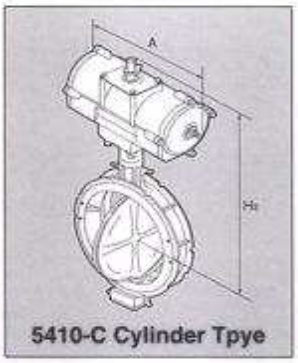
5410 Series For Normal Temperature Application (Maximum Working Pressure 1.0MPa)



5410-L Lever Tpye



5410-G Gear Tpye



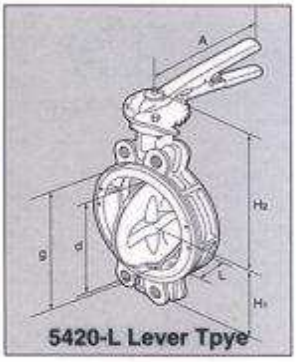
5410-C Cylinder Tpye

5410-M Motor Tpye

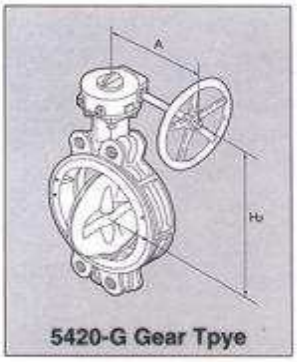
Size		L	d	g	H_1	Lever Type			Gear Type			Cylinder Type			Motor Type		
Inch	mm					H_2	A	Weight	H_2	A	Weight	H_2	A	Weight	H_2	A	Weight
2	50	43	40	92	62	151	160	2.5	141	141	4.4	264	236	4.3	281	179	5.8
2½	65	46	55	108	72	161	160	3.2	151	141	5.1	274	236	4.6	291	179	6.5
3	80	46	70	127	82	171	200	3.9	161	141	5.7	284	236	5.2	353	277	12.1
4	100	52	94	147	92	181	200	5.4	171	141	7.2	324	276	8.0	363	277	13.6
5	125	56	119	180	109	222	360	9.5	192	182	11.3	391	342	13.0	383	277	15.9
6	150	56	144	209	123	237	360	11.2	207	182	13.0	406	342	14.7	398	277	17.6
8	200	60	195	265	180	—	—	—	239	211	19.5	456	420	23.9	452	301	25.9
10	250	68	244	327	215	—	—	—	294	255	29.7	544	506	34.7	497	301	27.7
12	300	78	293	367	240	—	—	—	314	255	34.2	564	506	39.2	525	345	40.2

(Unit Dimensions: mm ; Weight: Kg)

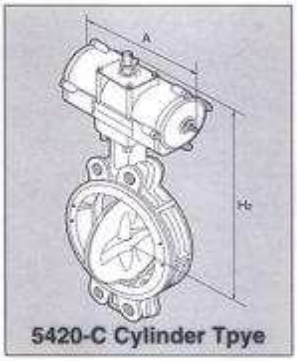
5420 Series For Normal Temperature Application (Maximum Working Pressure 2.0MPa)



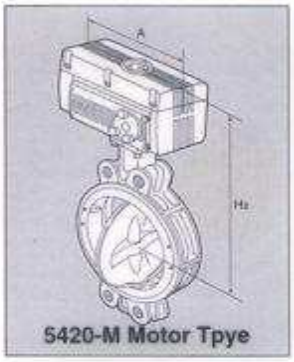
5420-L Lever Tpye



5420-G Gear Tpye



5420-C Cylinder Tpye



5420-M Motor Tpye

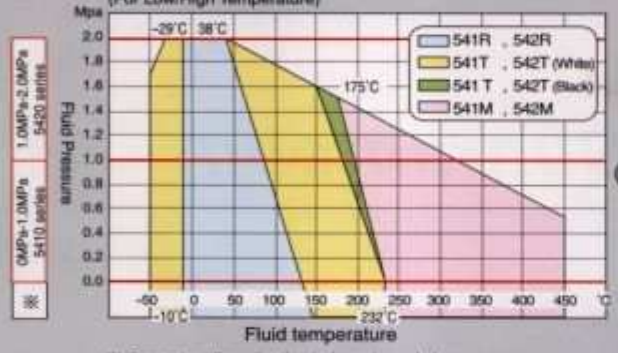
Size		L	d	g	H_1	Lever Type			Gear Type			Cylinder Type			Motor Type		
Inch	mm					H_2	A	Weight	H_2	A	Weight	H_2	A	Weight	H_2	A	Weight
2	50	43	40	99	90	166	200	4.3	156	141	6.2	279	236	5.7	348	247	12.6
2½	65	46	55	113	102	181	200	4.5	171	141	6.4	294	236	5.9	363	247	12.8
3	80	46	70	129	111	189	200	6.4	180	182	10.1	332	276	9.1	371	247	14.7
4	100	52	94	155	124	220	360	8.4	190	182	10.2	352	276	9.2	381	247	14.8
5	125	56	119	185	146	249	360	13.4	220	211	16.4	418	342	16.9	410	247	19.8
6	150	56	144	215	168	262	360	18.5	233	211	21.5	450	420	25.9	446	275	27.9
8	200	60	195	265	195	—	—	—	264	255	34.0	514	506	39.0	467	275	32.0
10	250	68	244	326	230	—	—	—	314	255	48.1	564	506	53.1	525	345	54.1
12	300	78	293	372	260	—	—	—	355	300	66.0	669	664	120.0	560	345	63.0

(Unit Dimensions: mm ; Weight: Kg)

Contact us on details for lower/higher temperature application valves.

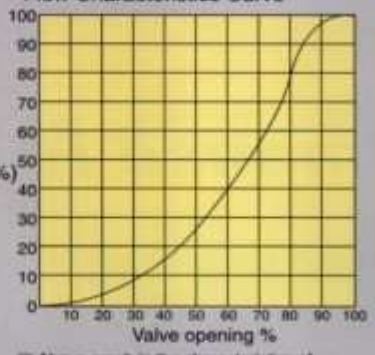
Performance Data

• Pressure - Temperature Ratings
(For Low/High Temperature)



※ Contact us if application is for extremely low temperature, vacuum condition or close to rating range.

• Flow Characteristics Curve



※ Above graph is the characteristics of 200mm size valve.

• Cv Values with Valve Fully open

Size	10/20 W.O.G
50mm	60
65mm	100
80mm	190
100mm	380
125mm	730
150mm	1250
200mm	2400
250mm	4000
300mm	5800

Precautions during handling

When using this product, please read [High Performance Butterfly Valve Handling Instruction], packed together, for correct product handling.

Storage

- As the Teflon seat ring is easily scratched, do not remove protective sheet until installation is completed. Ensure that dirt or oil do not get into the valve as this may lead to risk of leakage.
- For long term storage, when possible, store in a cool dark room. Avoid storing in a room with temperature of less than -10°C or more than 40°C, humid or with vibration.

Piping Installation

- Use valve only when it's installed in between of flanges.
- Ensure that the gasket is fixed correctly in the middle of valve and flange and that there is no gasket shift.
- Do not use soft material such as rubber as flange packing. It is recommended to use a joint sheet gasket.
- Ensure that valve opening does not face downwards. If the valve opening is to be faced horizontally, provide sufficient support to valve.
- Close the valve when installing or removing from piping. Do not immediately fix the valve soon after flange welding. Cool flange to room temperature before fixing in the valve.
- Do not weld flange onto piping after installing valve.
- Expand flange app. 6-10mm wider than valve's when inserting.
- Tighten piping bolts equally and diagonally. One-sided tightening may lead to risk of leakage. Stop tightening once the seat ring is not visible. Contact us if valve is to be installed at places with extreme temperature (below -10°C, above 60°C), exposure to frost or snow fall.

Operation

- Insulate valve if fluid temperature can reach lower than 0°C as the valve get frozen.
- If piping hydrostatic test pressure exceeds valve specification, do not use as a closed flange. Ensure that the disc is fully closed when the test is done.
- Do not use any other tools such as pipe wrench to open or close lever operated valves.

Maintenance

- Ensure that valve is fully closed when removing piping for maintenance purpose.
- If leakage happens at gland area, immediately tighten gland nuts equally.
- Do not touch the stopper bolt fixed on gear, cylinder and motor types actuators. This may lead to risk of leakage.
- For a no-hitch valve operation, maintenance should be carried out 1~2 times a year.

GUARANTEE PERIOD Within 18 months from date shipped out of factory or within 12 months from date of trial run or whichever period that expires earlier

Towards Tomorrow With High Technology Valve

OKM

OKUMURA ENGINEERING corp

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Dealers:

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