

# 4Matic®

Industrial Valves and Valve Automation

4MHP SERIES  
HIGH PERFORMANCE  
BUTTERFLY VALVES



WRAS

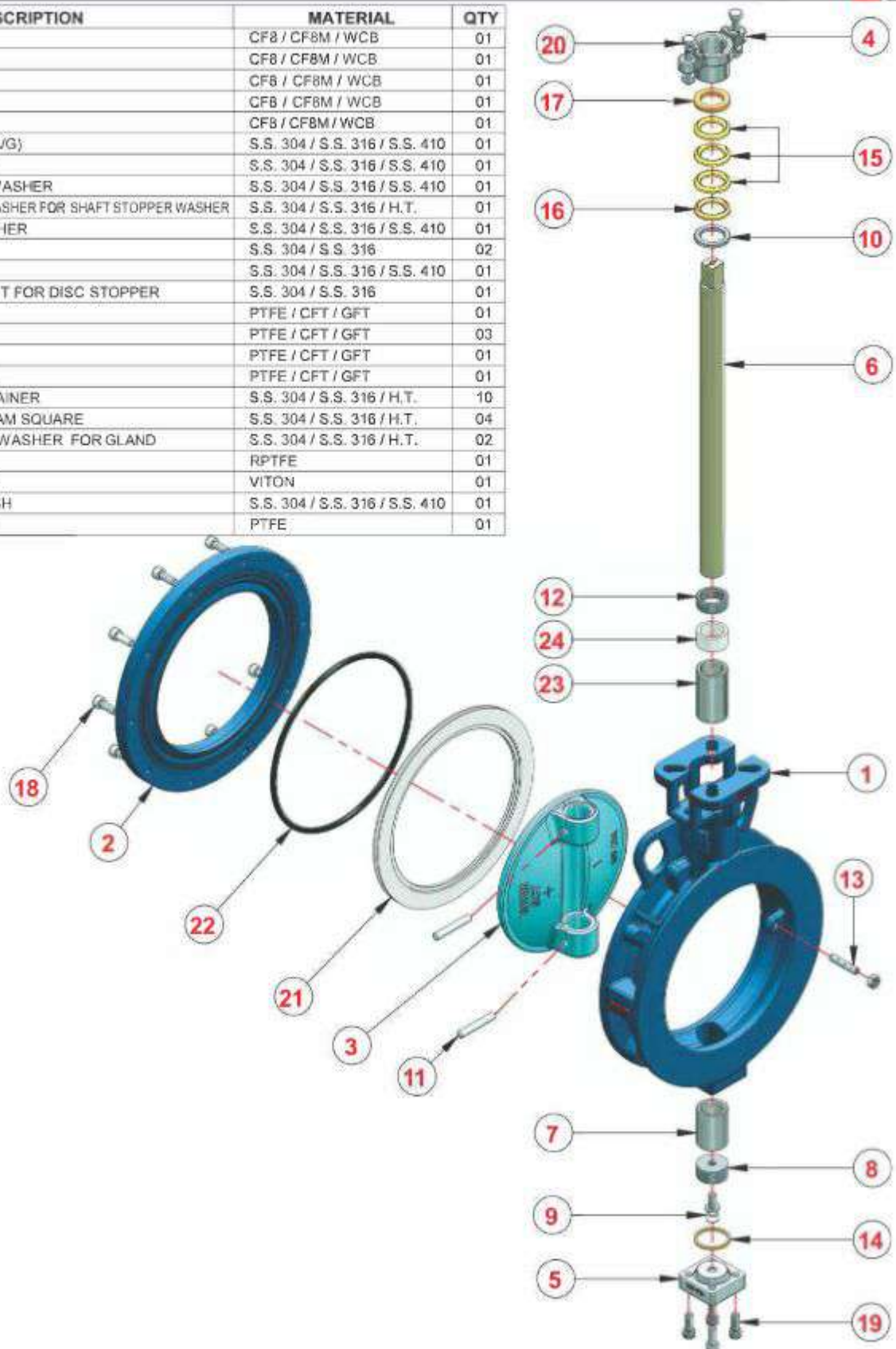


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Approved

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# 4MHP Series High Performance Butterfly Valves Exploded View

SR. NO.	DESCRIPTION	MATERIAL	QTY
01	BODY	CF8 / CF8M / WCB	01
02	RETAINER	CF8 / CF8M / WCB	01
03	DISC	CF8 / CF8M / WCB	01
04	GLAND	CF8 / CF8M / WCB	01
05	STEM SQUARE	CF8 / CF8M / WCB	01
06	SINGLE SHAFT (H/A/G)	S.S. 304 / S.S. 316 / S.S. 410	01
07	STEM SHAFT BUSH	S.S. 304 / S.S. 316 / S.S. 410	01
08	SHAFT STOPPER WASHER	S.S. 304 / S.S. 316 / S.S. 410	01
09	L.N BOLT & SPRING WASHER FOR SHAFT STOPPER WASHER	S.S. 304 / S.S. 316 / H.T.	01
10	FLANGE SIDE WASHER	S.S. 304 / S.S. 316 / S.S. 410	01
11	DISC PIN	S.S. 304 / S.S. 316	02
12	SHAFT COLLAR	S.S. 304 / S.S. 316 / S.S. 410	01
13	GRUB SCREW + NUT FOR DISC STOPPER	S.S. 304 / S.S. 316	01
14	FLAT 'O' RING	PTFE / CFT / GFT	01
15	'U' SEAL	PTFE / CFT / GFT	03
16	BASE SEAL	PTFE / CFT / GFT	01
17	HEADER 'V' SEAL	PTFE / CFT / GFT	01
18	L.N BOLT FOR RETAINER	S.S. 304 / S.S. 316 / H.T.	10
19	L.N BOLT FOR STEAM SQUARE	S.S. 304 / S.S. 316 / H.T.	04
20	HEX BOLT + NUT + WASHER FOR GLAND	S.S. 304 / S.S. 316 / H.T.	02
21	SEAT	RPTFE	01
22	O-RING FOR SEAT	VITON	01
23	SINGLE SHAFT BUSH	S.S. 304 / S.S. 316 / S.S. 410	01
24	SHAFT BUSH PTFE	PTFE	01



# 4MHP Series High Performance Butterfly Valves Characteristics

**BODY :** Single piece design in wafer type or lug type for dead-end service. Both the body types provide bi-directional sealing as standard to ANSI 150, 300 or 600 ratings. To give the best corrosion resistance, standard body materials are of carbon steel or stainless steel. Due to extended neck, pipeline installation is possible, stem packing adjustments can be easily accessed and mounting of actuator becomes easy.

**DISC :** The disc (Stainless Steel) is designed to marginalize resistance and maximize flow, giving a standard Cv.

**OVER TRAVEL PROTECTION :** To avert over-travel of the disc so as to minimize possible seat damage, an internal travel stopper has been integrated in the body design.

**STEM :** The stem is single piece high strength 17-4 PH stainless steel. The stem's output shaft is standardized so as to make actuators interchangeable.

**TAPER PINS :** To give a positive connection of maximum strength stem and the valve disc, taper pins are precision fit into drilled, taper reamed holes.

**HANDLE & LOCKING PLATE :** For positioning the valve disc to precise angle stops between the fully open and fully closed positions, a heavy duty spring, release handle and notched locking plate is provided.

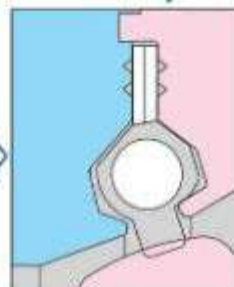
**STEM PACKING :** Due to stem packing system it becomes easy to access adjusting hex head nuts without requiring the removal of the actuators. The system is made up of a gland retainer, a gland ring, hex head nuts, studs and lock washers. A little 1/4 turn of the hex head nuts, is generally all that is necessary if field adjustment is ever required. Balanced adjustment must be there of both the hex head nuts. They should not be overtightened.

**STEM SEAL :** The stem seal system gives persistent compression for a positive seal around the stem and an anti-extrusion ring, made of carbon fiber contains the packing. For high temperature applications, flexible graphite rings are also available and are standard on fire safety valves.

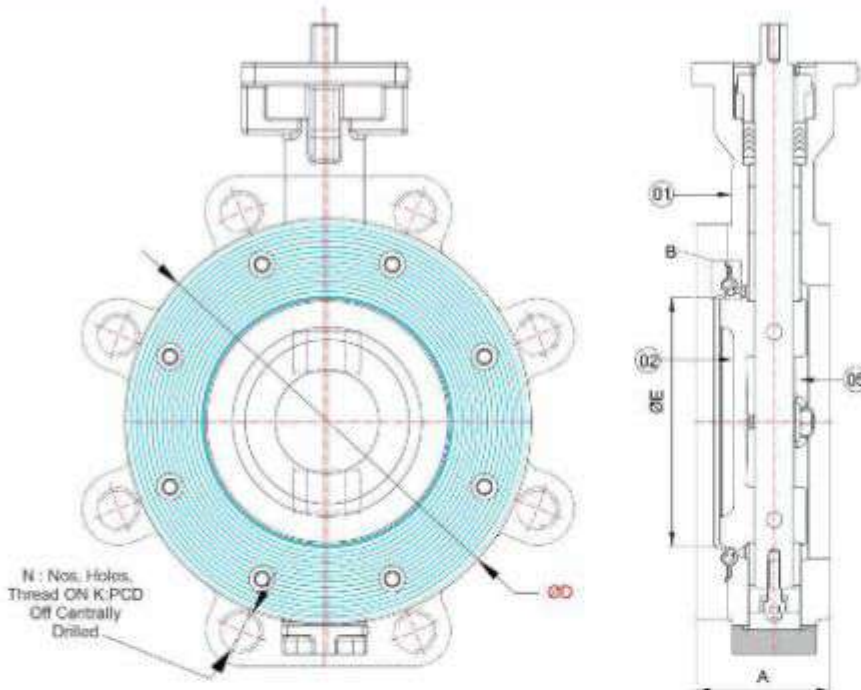
**STEM BEARINGS :** Bearings on top and bottom, consisting of a 316 stainless steel shell with a TFE/Glass Fabric Liner bearing surface, assuredly support the stem. Perfect resistance to corrosion and distortion from high temperatures and mechanical loading forces is provided by stem bearings.

**SEAT DESIGN :** The distinctive, two part seat assembly consists of a sturdy O-ring which is fully compressed by the RTFE seat. The assembly is encapsulated between the body and seat retainer. The replacement of seat is very simple - just take off the seat retainer, move the disc to the closed position and place a new seat. This easy mechanism will not interfere with the disc or stem.

**FIRE SAFE SEATING :** The seat usually connects the disc with both the sturdy soft seat material and metal seat. While there is fire or after a fire, when the sturdy soft seat material has been fully or partly destroyed, the metal seat gives a positive seal by staying in continuous contact with the disc in either direction of flow of media.



# 4MHP Series High Performance Butterfly Valves Dimensions 150#



### 4MHP MODEL Butterfly Valve Details

Pressure Rating	: 150#
Leakage Class	: Class VI (Six)
Seat Leakage	: Tight Shut Off
Working Pressure	: 10 Kg/cm <sup>2</sup>
Max Operating Temp.	: Up to 180°C
End Connection	: Wafer / Lug

No.	Description	Material
1	Body	ASTM A 216 Gr. WCB
		ASTM A 351 Gr. CF8
		ASTM A 351 Gr. CF8M
2	Disc	ASTM A 351 Gr. CF8
		ASTM A 351 Gr. CF8M
3	Seat	RPTFE
4	O-Ring	VITON
5	Shaft	ASTM A 276 TYPE S.S. 410
		ASTM A 564 GR.17 - 4 PH
		ASTM A 276 TYPE S.S. 304
		ASTM A 276 TYPE S.S. 316

All Dimensions are in MM.

Valve Size	Wafer Type				Lug Type				
	Tolerance	±3.3	±3	±3	±1.5				
MM	Inch.	A	ØD	ØE	Weight	PCD	N	Thread	Weight
40	1.1/2"	42	82	38	1.6 kg	NA	NA	NA	NA
50	2"	45	95	51	2.2 kg	NA	NA	NA	NA
65	2.1/2"	48	108	60	3 kg	139.7	4	5/8"-11	8.16 kg
80	3"	48	127	72	3.80 kg	152.4	4	5/8"-11	8.61 kg
100	4"	54	159	100	5.6 kg	190.5	8	5/8"-11	12.7 kg
125	5"	57	186	123	7.7 kg	215.9	8	3/4"-10	17.69 kg
150	6"	57	217	143	10.4 kg	241.3	8	3/4"-10	19.95 kg
200	8"	64	270	189	15.0 kg	298.4	8	3/4"-10	30.39 kg
250	10"	72	322	239	25.75 kg	361.9	12	7/8"-9	48.08 kg
300	12"	81	382	290	36.00 kg	431.8	12	7/8"-9	73.93 kg
350	14"	92	436	335	46.90 kg	476.3	12	1"-8	118.84 kg
400	16"	102	495	387.5	66.85 kg	539.8	16	1"-8	171.45 kg
450	18"	114	540	425	117 kg	577.9	16	1 1/8"-8	216 kg
500	20"	127	595	475	146.5 kg	635	20	1 1/8"-8	342.91 kg
600	24"	154	705	560	290 kg	749.3	20	1 1/4"-8	536.59 kg
750	30"	190	855	696	475 kg	914.4	28	1 1/4"-8	767 kg
900	36"	203	1032	864	675 kg	1085.8	32	1 1/2"-8	1090.88 kg

### Standards:

Design And Manufacturing	: BS EN 593 / API 609
Valve Face To Face Dim.	: BS EN 558 / API 609
Flange Standard Conformity	: ASME B. 16.5 150#
Inspection & Testing	: BS EN 12266-1/API 598

### Testing Detail

Shell Test	: 15 Kg / cm <sup>2</sup>
Seat Test (Hydro)	: 10 Kg / cm <sup>2</sup>
Pneumatic	: 07 Kg / cm <sup>2</sup>

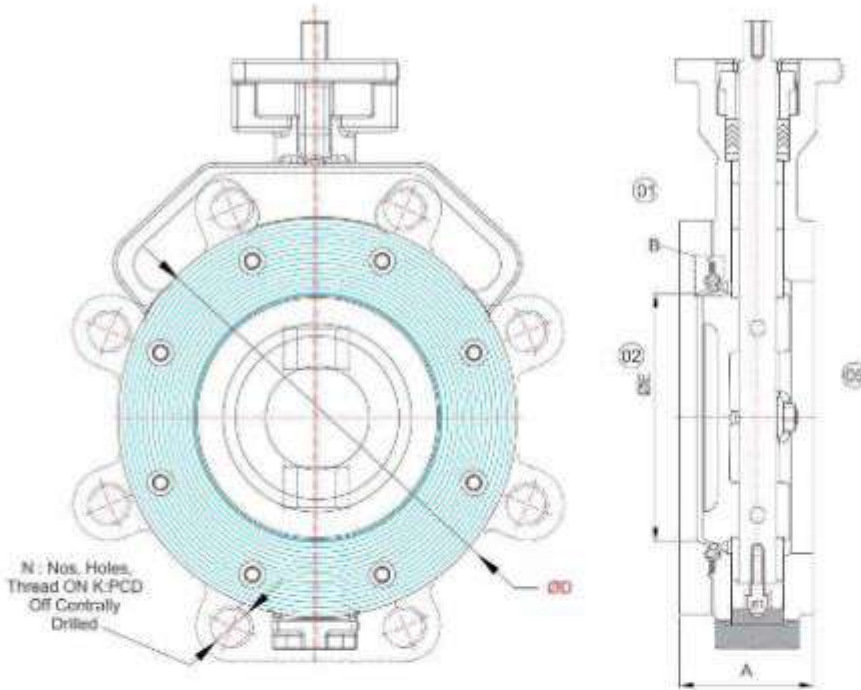
### CV VALUES

Valve Size	CV VALUES									
	10°	20°	30°	40°	50°	60°	70°	80°	90°	
MM	Inch									
50	2"	2	5	11	19	28	41	58	77	85
65	2.1/2"	2	9	20	28	45	60	80	120	130
80	3"	3	10	22	42	64	95	150	157	150
100	4"	6	17	41	75	116	174	273	284	290
125	5"	6	45	75	170	280	478	650	707	795
150	6"	7	51	116	221	340	510	799	833	850
200	8"	4	103	239	445	684	1026	1607	1678	1710
250	10"	50	151	353	655	1008	1515	2369	2470	2520
300	12"	79	236	552	1024	1576	2364	3704	3861	3940

### VALVE TORQUE 150#

Valve Size	VALVE TORQUE 150#			
	5 Bar	10 Bar	20 Bar	
MM	Inch	Nm	Nm	
50	2"	11	15	21
65	2.1/2"	20	28	38
80	3"	38	43	63
100	4"	50	58	80
125	5"	73	100	144
150	6"	113	144	181
200	8"	175	219	350
250	10"	294	331	375
300	12"	400	450	625

# 4MHP Series High Performance Butterfly Valves Dimensions 300#



**4MHP Butterfly Valve Details :-**

Pressure Rating	: 300#
Leakage Class	: Class VI (Six)
Seat Leakage	: Tight Shut Off
Working Pressure	: 20 kg/cm <sup>2</sup>
Max Operating Temp.	: Up to 180°C
End Connection	: Wafer / Lug

No.	Description	Material
1	Body	ASTM A 216 Gr. WCB
		ASTM A 351 Gr. CF8
		ASTM A 351 Gr. CF8M
2	Disc	ASTM A 351 Gr. CF8 ASTM A 351 Gr. CF8M
3	Seat	RPTFE
4	O-Ring	VITON
5	Shaft	ASTM A 276 TYPE S.S. 410
		ASTM A 564 GR.17 - 4 PH
		ASTM A 276 TYPE S.S. 304
		ASTM A 276 TYPE S.S. 316

All Dimensions are in MM.

Valve Size	Wafer Type				Lug Type				
	Tolerance	±3.3	±3	±3	±1.5				
MM	Inch.	A	ØD	ØE	Weight	PCD	N	Thread	Weight
65	2 1/2"	48	108.5	60.0	5.4 kg	149.2	8	3/4"-10	8.16 kg
80	3"	48	127	72	6.84 kg	168.3	8	3/4"-10	8.61 kg
100	4"	54	159	100	10.08 kg	200	8	3/4"-10	12.7 kg
125	5"	59	187	123	13.86 kg	235	8	3/4"-10	17.69 kg
150	6"	59	219	143.2	18.72 kg	269.9	12	3/4"-10	27.66 kg
200	8"	64	270	192	27 kg	330.2	12	7/8"- 9	46.72 kg
250	10"	87	340	239.2	46.35 kg	387.4	16	1" - 8	73.48 kg
300	12"	92	394	290	64.8 kg	450.8	16	1-1/8"- 8	112.49 kg
350	14"	117	436	335	84.42 kg	514.4	20	1-1/8"- 8	185.97 kg
400	16"	113	500	387.5	120.33 kg	571.5	20	1-1/4"- 8	305.26 kg
450	18"	149	540	425	210.6 kg	628.6	24	1-1/4"- 8	370.13 kg
500	20"	159	595	475	263.7 kg	685.8	24	1-1/4"- 8	466.29kg
600	24"	181	705	560	522 kg	812.8	24	1-1/2"- 8	834.15 kg

**Standards:**

Design And Manufacturing	: BS EN 593 / API 609
Valve Face To Face Dim.	: BS EN 558 / API 609
Flange Standard Conformity	: ASME B. 16.5 300#
Inspection & Testing	: BS EN 12266-1 / API 598

**Testing Detail**

Shell Test	: 30 kg/cm <sup>2</sup>
Seat Test (Hydro)	: 20 kg/cm <sup>2</sup>
Pneumatic	: 07 kg/cm <sup>2</sup>

**CV VALUES**

Valve Size	CV VALUES								
	10°	20°	30°	40°	50°	60°	70°	80°	90°
80	3"	---	---	---	---	---	---	---	---
100	4"	---	---	---	---	---	---	---	---
125	5"	---	---	---	---	---	---	---	---
150	6"	17.4	61	120	190	290	420	680	870
200	8"	27.2	100	200	300	460	640	1070	1370
250	10"	42	150	290	460	690	980	1630	2090
300	14"	73	260	510	800	1200	1710	2840	3640
400	16"	100	350	700	1100	1660	2360	3914	5010
450	18"	120	440	870	1360	2040	2900	4810	6170
500	20"	170	580	1160	1810	2720	3870	6400	8250
600	24"	260	900	1800	2830	4250	6050	10000	12900

**VALVE TORQUE 300#**

Valve Size	VALVE TORQUE 300#					
	10 Bar	20 Bar	25 Bar	35 Bar	40 Bar	50 Bar
80	3"	55	62	70	75	80
100	4"	72	89	104	111	125
125	5"	96	127	137	148	178
150	6"	126	138	178	194	220
200	8"	205	252	281	304	354
250	10"	325	468	503	560	663
300	12"	465	685	777	868	1005
350	14"	747	1126	1461	1776	2021
400	16"	1065	1654	2020	2204	2700
450	18"	1346	2143	2458	2938	3428
500	20"	2014	3056	3590	3852	4570
600	24"	3052	4578	5223	5876	6971

## 4MHP Series High Performance Butterfly Valves

## Applications

4MHP Series High Performance butterfly valves handle a wide range of conditions and media, such as corrosive chemicals, water, gases, acids, alkalies, hydrocarbons plus many other fluids.

4Matic Series has been specifically designed to meet most applications. When applications demand special requirements, 4Matic offers valves and materials that meet these needs.

### VACUUM

4MHP Series valves with PTFE seats are recommended for vacuum service down to .02 mm Hg absolute pressure, or 20 microns. For vacuum service down to  $1 \times 10^{-3}$  mm Hg absolute pressure, or 1 micron, specially prepared valves are recommended.

Under certain conditions, these valves serve well in the high vacuum range down to  $1 \times 10^{-6}$  mm Hg absolute pressure.

### STEAM

4MHP valves are specifically designed for a wide range of high temperature and high pressure applications including on-off and modulating control of hot water, condensed water or chilled water. The valve is rated 150 psi (10.3 bar) saturated steam at 366°F (185°C) for on-off applications. For modulating service, the Series 4MHP is rated 50 psi at 300°F. Use of the standard RPTFE seat is recommended for this service.

### DRY CHLORINE

-Gas or Liquid Special materials as well as assembly and testing procedure sare applied to assure bubble-tight closure in these critical services.

### ASH HANDLING AND ABRASIVE

For applications where flow velocity and differential pressure are low, RPTFE seats and nickel plated discs are recommended. For applications requiring improved resistance to wear and particles of higher hardness, a stellite faced disc and FIRE SAFE design are recommended.

### CAUSTIC

Valve materials must be selected for sufficient corrosion requirements. Stainless steel is recommended for sodium and potassium hydroxide applications.

### HEATING, VENTILATION AND AIR CONDITIONING (HVAC)

4MHP valves can be used for balancing water flow, main stop valves, block valves, throttling valves, and control of pump suction or discharge.

### OXYGEN

4MHP valves for critical gaseous oxygen service are specially prepared, cleaned, inspected, assembled and tested to ensure removal of all burrs, sharp edges, dirt, hydrocarbon oil or grease, and other contaminants. Each valve is individually wrapped and sealed in polyethylene before shipment.

### SOUR GAS

Selected materials of construction meeting NACE standards (MR-01-75) permit ready application and maximum serviceability in these difficult services.

### DEAD-END SERVICE

4MHP Series High Performance butterfly valves with lug bodies for bi-directional dead-end service are offered as standard in full ANSI Class 150, 300 and 600 ratings.

4MHP Series valves can be optionally supplied in a number of different seat and body materials

Please write to us on [sales@4maticvalves.com](mailto:sales@4maticvalves.com)



## 4MHP Series High Performance Butterfly Valves Automation

### 4MHP Series available with Electric Actuator



#### Various power supply:

Single Phase - 220V AC 50/60 Hz, 110V AC, 48V DC, 24V DC, 12V DC  
Three Phase - 415V AC 50/60 Hz, 380V AC, 460V AC

#### Enclosure :

IP 67/68, Weather-proof (IS / IEC 60529),  
Flame-proof or Ex-proof (IS/IEC 60079) Zone II, Gas Group IIB T4

#### Manual Override:

Scada / PCL compatible Advanced design with auto declutch mechanism to prevent user from injury.

#### Integral Starter Unit:

Selector Switches : Open/ Stop/Close Auto/ Manual or Remote / Local

**Indicator Lamps** : Open/ Close / Error

#### Characteristics: On / Off type :

Modulation Control (Signal Input: 4~20mA / 1~5V DC / 2~10V DC)  
Potentiometer Feedback (4~20mA)  
Auxiliary Limit Switches (2 Units)  
2 wire for On/Off operation

### 4MHP Series available with Pneumatic Actuator

#### Various Pneumatic Actuators:

Scotch & Yoke Actuator  
Pneumatic Rotary Actuator 3 Position  
Pneumatic Rotary Actuator Stainless Steel  
Pneumatic Rotary Actuator Single Acting  
Pneumatic Rotary Actuator Double Acting  
Aluminium Body Scotch Yoke Pneumatic Actuator  
Pneumatic Single Acting Double Decker Actuator

#### Accessories

Pneumatic – Pneumatic Valve Positioner  
Electro – Pneumatic Valve Positioner  
Smart Positioner  
Euro Switch  
Weather Proof Micro Limit Switch Box  
Flam Proof Limit Switch Box  
Flame Proof Stainless Steel Micro Limit Switch Box  
3/2 way and 5/2 way Namur Solenoid Valve (All standard voltage available)  
Poppet type Namur Solenoid Valve  
Spool type Namur Solenoid Valve  
Filter Regulator  
Air Volume Booster  
Air Lock Valve





## 4Matic Valves



Exported Over 60+ Countries