

Straight Type Diaphragm Valve (Basic type: Type 500)

Manually Operated Diaphragm Valve: Type 500



Nominal Size (DN): 15 - 300

Pneumatically Operated ON-OFF Diaphragm Valve: Type PO(PN) 1500N



Nominal Size (DN): 15 - 100

PO...Reverse Acting(Air to Open)

PN...Double Acting

Pneumatically Operated ON-OFF Diaphragm Valve: Type HOT (HN) 1500N



Nominal Size (DN): 125 - 300

HOT...Reverse Acting(Air to Open)

HN...Double Acting

● Large and high output type

Electrically Operated Diaphragm Valve (1): Type MS4500



Nominal Size (DN): 25 - 300

Electrically Operated Diaphragm Valve (2): Type NR4500



Nominal Size (DN): 15 - 50

For the product specifications and details, contact our Sales Dept. or local representative.

● LIST OF DIAPHRAGM VALVES

Specifications		Weir type diaphragm valve (Type 400)												Straight type diaphragm valve (Type 500)						
		Manually operated type				Pneumatically operated type ON-OFF diaphragm valve				Pneumatically operated flow control diaphragm valve				Manually operated type			Pneumatically operated ON-OFF diaphragm valve			Electrically operated type
		①Type PO(PC, PN) 1400N		②Type HO(HO, HN) 1400N		①[Rolling diaphragm type]		②[Cylinder type]		①Type PO(PN) 1500N		②Type HO(HN) 1500N		Type 500	Type	Type	Type			
Reverse Acting	Direct Acting	Double Acting	Type	Reverse Acting	Direct Acting	Double Acting	Type	Reverse Acting	Direct Acting	Double Acting	Type	Reverse Acting	Double Acting							
Material (Base material)	Valve type	Type	Type	Type	Type	Type	Type	Type	Type	Type	Type	Type	Type	Type	Type	Type	Type			
Gray cast iron	F0200	PC1400N	PN1400N	HO1400N	HN1400N	BO3400	BC3400	HN3400N	PO1500N	PN1500N	HOT1500N	HN1500N	Type 4400	Type 500	PO1500N	PN1500N	HO1500N	HN1500N	Electrically operated type	
Ductile cast iron	F0D-S	15-150	15-150	100-250	150	15-150	15-150	150-300	15-150	15-150	15-150	15-150	15-300	15-300	15-100	15-100	125-150	125-300	15-300	
Stainless steel	SCS13	15-150	15-150	100-250	150	15-150	15-150	150-300	15-150	15-150	15-150	15-150	15-300	15-300	15-100	15-100	125-150	125-300	15-300	
	SCS14	15-150	15-150	100-250	150	15-150	15-150	150-300	15-150	15-150	15-150	15-150	15-300	15-300	15-100	15-100	125-150	125-300	15-300	
Dissolved zinc plated	SCS16	15-150	15-150	100-250	150	15-150	15-150	150-300	15-150	15-150	15-150	15-150	15-300	15-300	15-100	15-100	125-150	125-300	15-300	
	HDZ55(FC200)	15-150	15-150	100-250	150	15-150	15-150	150-300	15-150	15-150	15-150	15-150	15-300	15-300	15-100	15-100	125-150	125-300	15-300	
Hard natural rubber lined	(FC200)	15-150	15-150	100-250	150	15-150	15-150	150-300	15-150	15-150	15-150	15-150	15-300	15-300	15-100	15-100	125-150	125-300	15-300	
Soft natural rubber lined	(FC200)	15-150	15-150	100-250	150	15-150	15-150	150-300	15-150	15-150	15-150	15-150	15-300	15-300	15-100	15-100	125-150	125-300	15-300	
Chloroprene rubber lined	(FC200)	15-150	15-150	100-250	150	15-150	15-150	150-300	15-150	15-150	15-150	15-150	15-300	15-300	15-100	15-100	125-150	125-300	15-300	
Butyl rubber lined	(FC200)	1-150	1-150	100-250	150	15-150	15-150	150-300	15-150	15-150	15-150	15-150	15-300	15-300	15-100	15-100	125-150	125-300	15-300	
Polyethylene lined	(FC200)	20-150	20-150	100-200	150	20-150	20-150	150-200	20-150	20-150	20-150	150-200	20-200	-	-	-	-	-	-	
PFA lined	(FCD-S)	15-150	15-150	100-250	150	15-150	15-150	125-250	15-150	15-150	15-150	150-250	15-250	-	-	-	-	-	-	
	(SCS13)	15-80	15-80	-	-	15-80	15-80	-	15-80	15-80	15-80	-	15-80	-	-	-	-	-	-	
ETFE lined	(FCD-S)	15-100	15-100	100	-	15-100	15-100	-	15-100	15-100	15-100	-	15-100	-	-	-	-	-	-	
Glass lined	(FCD-S)	15-150	15-150	125-200	150	15-150	15-150	125-200	15-150	15-150	15-150	150-200	15-200	-	-	-	-	-	-	
Ceramic lined	(FCD-S)	15-80	15-80	-	-	15-80	15-80	-	15-80	15-80	15-80	-	15-80	-	-	-	-	-	-	
Natural rubber	NR+BR	15-150	15-150	100-250	150	15-150	15-150	125-300	15-150	15-150	15-150	150-300	15-300	15-300	15-100	15-100	125-150	125-300	15-300	
Chloroprene rubber	CR	15-150	15-150	100-250	150	15-150	15-150	125-300	15-150	15-150	15-150	150-300	15-300	15-300	15-100	15-100	125-150	125-300	15-300	
Butyl rubber	IIR	15-150	15-150	100-250	150	15-150	15-150	125-300	15-150	15-150	15-150	150-300	15-300	15-300	15-100	15-100	125-150	125-300	15-300	
Nitrile rubber	NBR	15-150	15-150	100-250	150	15-150	15-150	125-300	15-150	15-150	15-150	150-300	15-300	15-300	15-100	15-100	125-150	125-300	15-300	
EPDM	EPDM	15-150	15-150	100-250	150	15-150	15-150	125-300	15-150	15-150	15-150	150-300	15-300	15-300	15-100	15-100	125-150	125-300	15-300	
NEW PTFE/EPDM	NEW PTFE/EPDM	15-100	15-100	100	-	15-100	15-100	-	15-100	15-100	15-100	-	15-100	-	-	-	-	-	-	
NEW PTFE/EPDM+α	NEW PTFE/EPDM+α	15-100	15-100	100	-	15-100	15-100	-	15-100	15-100	15-100	-	15-100	-	-	-	-	-	-	
PTFE/EPDM	PTFE/EPDM	125-150	125-150	125-250	150	125-150	125-150	125-250	125-150	125-150	125-150	150-250	125-250	-	-	-	-	-	-	
PTFE/EPDM+α	PTFE/EPDM+α	125-150	125-150	125-250	150	125-150	125-150	125-200	125-150	125-150	125-150	150-200	125-200	-	-	-	-	-	-	

Main body material and range of applicable nominal size (DN)

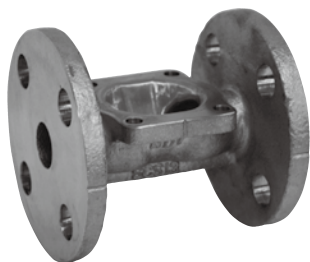
Diaphragm material and range of applicable nominal size (DN)

· This table outlines the standard manufacturing range of the flanged type body.
· For other material and/or nominal size, contact our Sales Dept. or local representative.

2. Straight Type Diaphragm Valve: Type 500

① Common specifications: Body material

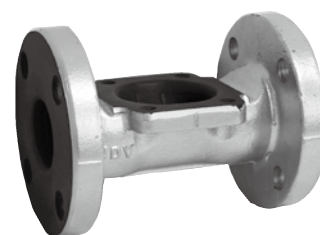
● Metal material (without lining)



Name	Main material	Material code	Flange type, Type 500
			Nominal Size(DN)
Gray cast iron	FC200	01	15-300
Ductile cast iron	FCD-S	04	15-300
Stainless steel	SCS13	07	15-300
	SCS14	12	15-300
	SCS16	13	15-300
Dissolved zinc plated	HDZ55(FC200/FCD-S)	71	15-300

● Rubber lining

Name	Base material	Material code	Flange type, Type 500
			Nominal Size (DN)
Hard natural rubber lined	FC200/FCD-S	30/30(04)	15-300
Soft natural rubber lined	FC200/FCD-S	33/33(04)	15-300
Chloroprene rubber lined	FC200/FCD-S	35/35(04)	15-300
Butyl rubber lined	FC200/FCD-S	36/36(04)	15-300



② Common specifications: Diaphragm material

● Rubber diaphragm

Name	Main material	Material code	Nominal Size(DN)	Applicable temperature
Natural rubber	NR+BR	NR	15-300	-20 to 70°C
Chloroprene rubber	CR	CR	15-300	0 to 70°C
Butyl rubber	IIR	BG	15-300	-10 to 70°C
Nitrile rubber	NBR	AB	15-300	5 to 70°C
E P D M	EPDM	EP	15-300	-20 to 90°C



DN100 -

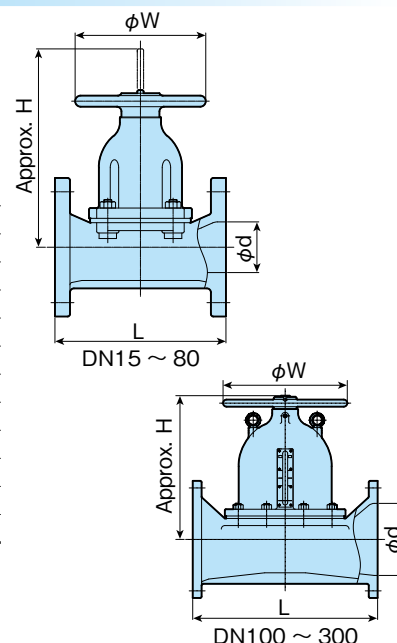
- The applicable temperature differs by the body material, fluid specifications (composition and pressure), opening-closing frequency and nominal size. Take note that vacuum specification is not applicable to the straight type diaphragm valve because of the characteristics of the diaphragm and the shape of the body.
- For any material, nominal size and connection standards required other than listed here, please contact our Sales Dept. or local representative.

For the detail of material selection, see the material selection list on p.48.

③ Principal dimensions

● Flange type: Type 500

Nominal size (DN)	Diameter d		Face-to-face length L		Handwheel diameter W	Height H, approx	Lining rubber thickness T	Mass approx. (kg)
	Other than rubber-lined	Rubber-lined	Other than rubber-lined	Rubber-lined				
	Unit: mm							
15	13	15	102	107	80	105	3	2.6
20		19	118	123	80	105	3	3.0
25		25	127	132	80	155	3	4.8
40		38	159	165	80	155	3	5.7
50		51	191	197	140	210	3	7.8
65		64	216	222	165	250	3	14.0
80		76	254	260	197	295	3	19.0
100		102	305	313	250	270	4	23.5
125		127	356	364	300	310	4	38.5
150		152	406	414	300	380	4	64.0
200		203	521	529	350	415	4	105.0
250		254	635	645	500	570	5	166.0
300		305	749	759	600	630	5	330.0



- Remarks : 1. The mass is for the body of stainless steel.
2. Height H represents the dimension in fully open valve state.

① Manually Operated Diaphragm Valve: Stroke and Cv Value

Valve type Nominal Size DN	Weir type (Type 400)							Straight type (Type 500)		
	Main body Diaphragm Stroke (mm)	Without lining		Rubber-lined	Glass-lined	PFA-lined	PFA-lined ETFE-lined	Main body Diaphragm Stroke (mm)	Without lining	Rubber-lined
		Rubber	PTFE	Rubber	PTFE	59(M)/59(S) PTFE	59(2S)/60 PTFE		Rubber	Rubber
15	6	4		4.2	4.2	2.3	3	12	8.5	—
20	10	11	10.5	8.7	11	7.8	7	12	8.5	—
25	12	23.5	17	15	22	10		28	37	30
40	20	55	49	33	58	27	30	28	74	66
50	28	83	76	61	99	42	57	40	124	104
65	34	115	95	97	123	64	71	52	232	190
80	40	172	176	166	229	112	111	62	330	264
100	52	303	306	194	291	210	161	68	588	480
125	68	355		310	405	230	—	80	924	720
150	80	530		440	585	330	—	110	1680	1260
200	120	1200		1000	1320	830	—	125	2040	1740
250	140	1600		1450	—	1170	—	180	3180	2700
300	164	2580	—	2090	—	—	—	190	6060	4880

* The Cv values of Material code "59(2S)" with DN65 or bigger are same as "59(M)/59(S)".

② Maximum Working Pressure and Inspection Pressure

- The maximum working pressure is determined by the combination of diaphragm (rubber/PTFE) and the main body material.
(The following table outlines the values for fluids of ordinary temperature. The max. working pressure is reduced as the fluid composition changes or the fluid temperature rises.)
- Only weir type can be used under the vacuum environment with condition, please inquire separately.
- Water pressure in (Parentheses) represent inspection pressure. In case inspection pressure is over 0.6MPa, inspection medium is N₂ and in case the inspection pressure is 0.6MPa or less, inspection medium is Air.

Unit: Mpa

Valve type Nominal Size DN	Weir type (Type 400)				Straight type (Type 500)	
	Diaphragm and body material combination					
	Rubber diaphragm		PTFE diaphragm		Rubber diaphragm	
	Cast iron Stainless steel casting Rubber-lined Resin-lined	Glass-lined Ceramic-lined	Cast iron Stainless steel casting Resin-lined	Rubber-lined Glass-lined Ceramic-lined	Cast iron Stainless steel casting Rubber-lined	
15	1.4(1.6)	1.0(1.2)	1.0(1.2)	0.7(0.85)	1.0(1.2)	
20						
25						
40						
50	1.0(1.2)	0.7(0.85)	0.7(0.85)	0.7(0.85)	0.7(0.85)	
65						
80						
100	0.8(1.0)	0.5(0.6)	0.7(0.85)	0.5(0.6)	0.6(0.75)	
125						
150						
200						
250	0.7(0.85)	0.5(0.6)	0.4(0.5)	0.4(0.5)	0.35(0.4)	
300					0.4(0.5)	

③ Material selection

● Main body material

For application to chemical solution, select the body material by giving consideration to the composition and the temperature. If the fluid is of frictional type containing powder and/or solids, select wear resistant material, simultaneously giving full consideration to the fluid pressure, flow rate, valve opening and the installation position to the piping since these factors may affect the body material.

● Diaphragm

Similar to the selection of body material, to select material for the diaphragm, it is necessary to consider the frequency of open/close service in repetition in addition to the chemical resistance. You are also requested to check the maximum service pressure as it differs by the combination of the diaphragm and body materials. In the case of a weir type diaphragm valve, avoid the combination of PTFE diaphragm and soft rubber lining (Code Nos.33, 35 and 36).

For the detail of material selection, see the material selection list on p.48.

④ Standard exterior paint color

- Rust resistant coating (Gray) without top coating