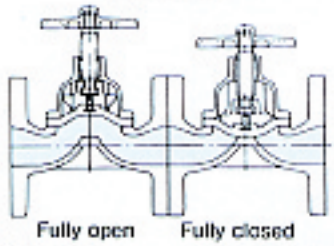
Features of Diaphragm Valves

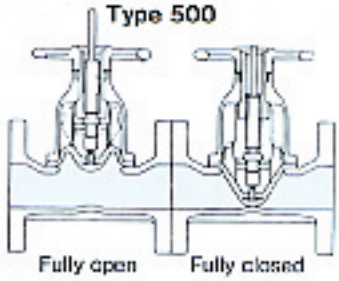
Diaphragm valve consists of two types, type 400 (weir type) and type 500 (straight way type) of which type 400 is the basic type. Their features are compared as follows :

Type 400



(1) Highly airtight valve seat can completely shut off corrosive gas.
(2) Rich variety of material for the main body and diaphragm ensures resistance to most of the corrosive fluids making it widely applicable.
(3) Applicable as a control valve.
(4) Long diaphragm life.

Type 500



(1) Few pressure loss.
(2) Suitable for application to viscous fluid, fibrous slurry, suspended substances, solids and other hard to flow fluids. Consequently this type is used in large quantity in the water purifying plants, sewage treatment plants and other water processing facilities.
(3) Suitable for transferring wheat, beans, coal, gravel and other granular substances.

Ease of maintenance and repair work

Drive unit and diaphragm can be disassembled or reassembled with ease by removing/tightening the bolts and nuts without disconnecting the main body from the piping.

Any unskilled person can complete the inspection/repair work within a short span of time.

Zero leak from valve seat

Provided with the touch line, the seat surface of the diaphragm perfectly shuts off fluids containing sludges and/or solids by using rubber diaphragm.

If the weir section in the main body is slightly worn, extra tightening of handwheel eliminates leakage.

Spindle of stainless steel

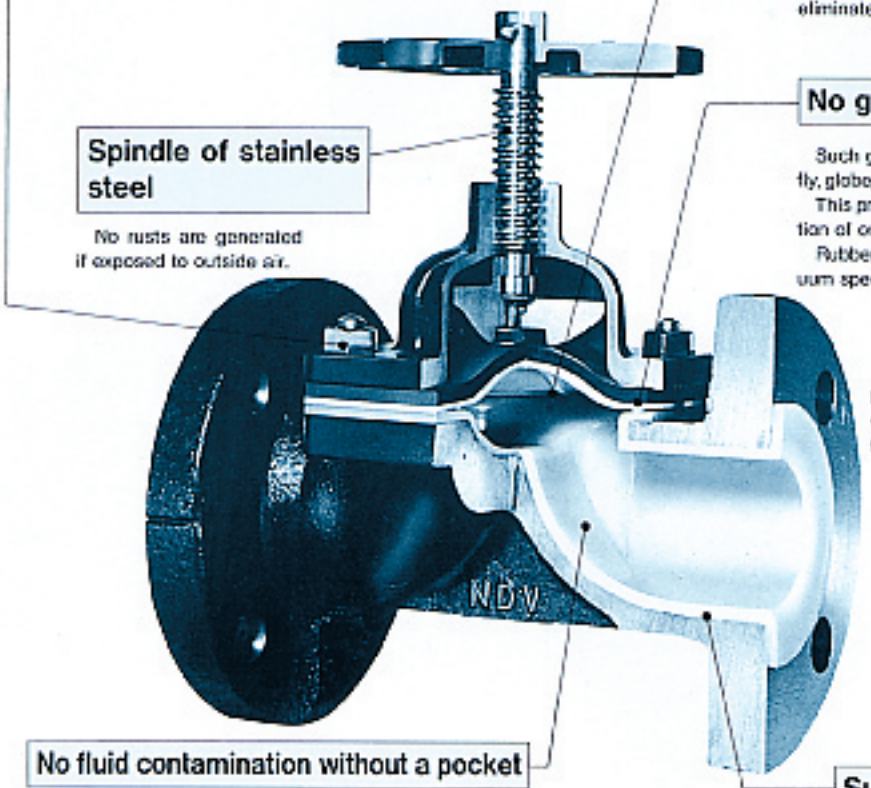
No rusts are generated if exposed to outside air.

No gland leakage

Such gland packings as used for a butterfly, globe, sluice, ball valves, etc. are not used.

This prevents leakage to outside or infiltration of outside air.

Rubber diaphragm is best suited for a vacuum specification.



ETFE lined diaphragm valve Model No. 460 NB type

No fluid contamination without a pocket

Separated by the diaphragm, the drive system contaminates no fluid.

Moreover, the fluid passage is streamlined without pockets to provide self-purifying performance.

Provides the food and pharmaceutical plants with high sterilization effects.

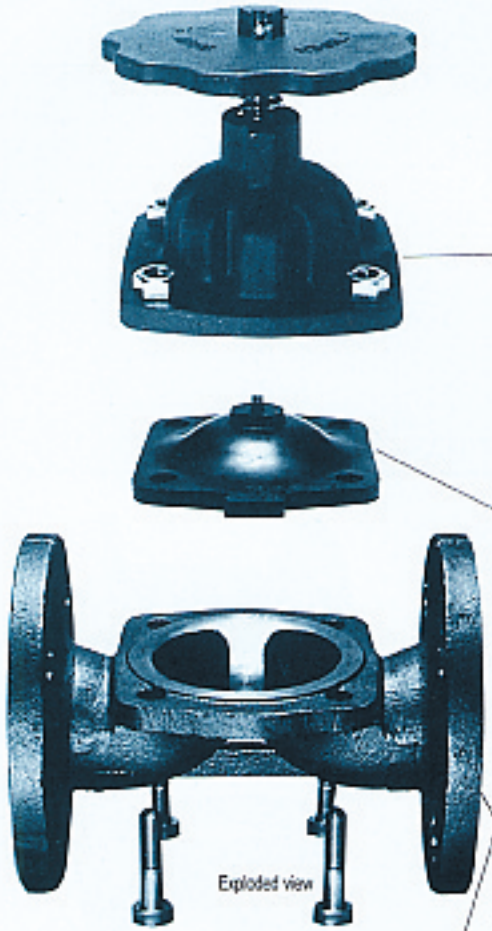
Superb corrosion resistance

Only diaphragm valves can be finished with rubber lining, resin (PFA, ETFE) lining and glass lining.

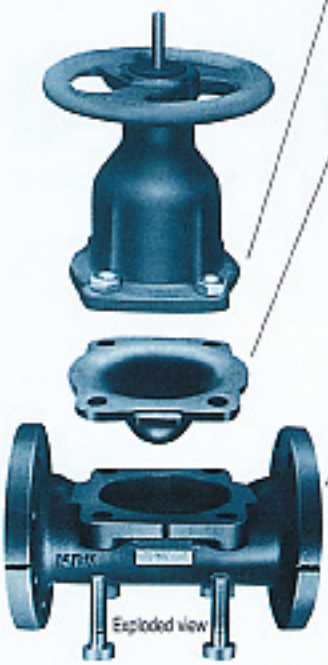
Basic Structure

The diaphragm valve consists of three units, Actuator, diaphragm and the body. They are jointed with bolts and nuts.

• Type 400



• Type 500



Actuator

Handwheel-operated system. Structure and appearance change by the nominal diameter.

Also available drive units for pneumatically operated ON-OFF valve, pneumatically operated control valve and electrically operated valve.

Diaphragm

Diaphragm valve is structured so that only the diaphragm and the body come in contact with fluid. One of the roles of diaphragm is to separate the drive unit from the fluid and the other is to shut off the fluid.

Our company has been jointly researching and developing physically and scientifically advanced blended rubber material and insertion cloths with the Toyo Rubber Industry Co., Ltd. for many years. The achievement is reflected in our incomparably long-life diaphragms.

Body

The actuator presses the diaphragm to the weir at the center of the body to shut fluid off.

Connection method includes screw type and welded type in addition to the flange type.

The body material consists of metal without and with lining.

Body

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.

• Without lining

Code No.	Type		Type 400				Type 500	
	Connection type		Flange type		Screwed type, Type 400RC	Welded type Type 400 (SW and BW types)	Flange type, Type 500	Screwed type, Type 500RC
	Material		Type 400	Type 400L				
01	Gray cast iron	FC200	15~500	25~300	40~80	–	15~350	40~80
04	Ductile cast iron	FCD-S	15~500	15~300	15~25	–	15~350	15~25
05	Cast steel	SCPH 2	50~250	–	15~80	15~100	15~350	–
06	Nickel chromium cast steel	Ni-Cr-Fc	25~125	–	–	–	15~350	–
07	Stainless steel	SCS13A	15~500	15~300	40~80	15~150	15~350	15~80
12	Stainless steel	SCS14A	15~500	15~300	15~80	15~150	15~350	15~80
13	Stainless steel	SCS16A	15~500	15~300	15~80	15~150	15~350	15~80
26	Bronze casting	BC 6	15~200	15~300	15~80	–	15~300	15~80
71	Zinc plated	HDZ55(FC200)	15~350	15~300	15~80	–	15~350	15~80

• Rubber lining

Code No.	Material		Type		
		Base material	Type 400	Type 400L	Type 500
30	Hard natural rubber lined	FC200	15~500	15~300	15~350
33	Soft natural rubber lined	FC200	15~500	15~300	15~350
35	Chloroprene rubber lined	FC200	15~500	15~300	15~350
36	Butyl rubber lined	FC200	15~500	15~300	15~350

FCD-S may be lined by request

• Synthetic resin lining

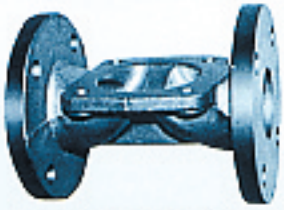
Code No.	Material		Type		
		Base material	Type 400	Type 400L	Type 500
50	Polyethylene lined	FC200	20~200	20~150	–
59	PFA lined (see note 1)	FCD-S	15~250	–	–
60	ETFE lined (see note 1)	FCD-S	15~100	–	–
61(M)	New-PFA lined (see note 1)	FCD-S	15~250	–	–

• Glass lining and Porcelain

Code No.	Material		Type	
		Base material	Type 400	Type 500
40	Glass lined (see note 1)	FC200	15~300	–
80	Porcelain (Mullite)	FC200	15~80	–

Note (1)

This product falls on a strategic material stipulated in the Foreign Exchange and Foreign Trade Control Laws. For export, it requires an export license on the basis of the aforementioned laws and, if necessary, export-related laws and regulations of the United States of America and other countries.

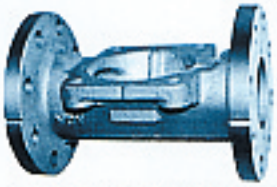


Type 400 (flange type)

Type 400L (angle type)

Type 400RC (screwed type)

Type 400SW (welded type)



Type 500 (flange type)

Type 500RC (screwed type)

Diaphragm

To select material for the diaphragm, it is necessary to give consideration to the frequency of open/close service in repetition in addition to the examination on chemical resistance as in the case of the body. You are also requested to check the maximum service pressure as it differs by the combination of the diaphragm and body materials.

Avoid the combination of PTFE diaphragm and soft rubber lining (Code Nos. 33, 35 and 36) as they produce adverse result.

Code No.	Name	Principal material	Type			
			Type 400		Type 500	
			Applicable nominal diameter	Applicable temperature	Applicable nominal diameter	Applicable temperature
NR	Natural rubber	NR+BR	15~500	−40~80°C	15~350	−20~70°C
CR	Chloroprene	CR	15~500	− 5 ~90°C	15~350	0 ~70°C
BG	Butyl rubber	IIR	15~500	−25~90°C	15~350	−10~70°C
AB	Nitrile rubber	NBR	15~500	5 ~80°C	15~350	5 ~70°C
EP	EPDM	EPDM	15~500	−40~120°C	15~350	−20~90°C
UG	Polyurethane	EU	15~500	− 5 ~70°C	−	−
HP	Hyperon	CSM	15~500	− 5 ~100°C	−	−

Code No. Diaphragm/ Back rubber	Name Diaphragm/ Back rubber	Main material Diaphragm/ Back rubber	Applicable nominal diameter	Applicable temperature
TX/CE	NEW PTFE/EPDM	PTEF/EPDM	15~100	−20~143°C
TX/CX	〃	〃	〃	−20~151°C

Code No. Diaphragm/ Back rubber	Name Diaphragm/ Back rubber	Main material Diaphragm/ Back rubber	Applicable nominal diameter	Applicable temperature
TF/CE	PTFE/EPDM	PTEF/EPDM	125~300	−20~143°C
TF/CX	〃	〃	〃	−20~151°C

The applicable temperature differs by the fluid specifications (composition and pressure), opening/closing frequency and nominal diameter. In addition, vacuum specification is limited by the type of diaphragm and the nominal diameter because of the relationship between the degree of vacuum and the temperature. For further detail, please contact this company.

400 type

● Rubber diaphragm

DN15~20

DN25~80

DN100 or over

500 type

DN80 or under

DN100 or over

400 type

● New PTFE diaphragm (with rubber back)

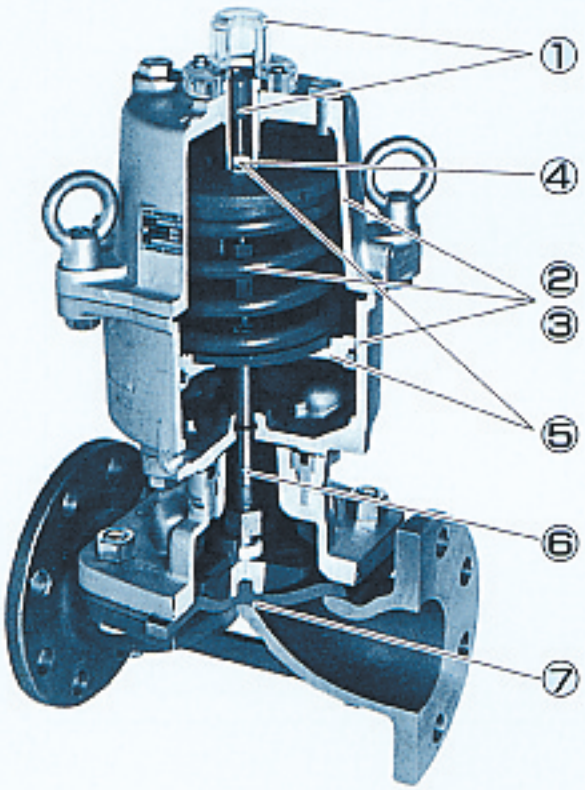
DN80 or under

DN100 or over

Weir Type (Type 1400N)

Reverse Acting Type (Type HO1400N)

・Structure and Features



Type HO1400N

① Indicator system showing the valve open/closed state at a glance

The cap is made of transparent polycarbonate resin. When the valve is fully open, the end of the valve stem turns (red) brightly to tell that the valve is fully open.

② Compact and Lightweight

Multispring design and adoption of high tensile aluminum alloy realize compact and lightweight features.

③ Selection of economical drive unit

Two to three types of drive units available per nominal diameter offer the selection of a most economical drive unit according to your service flow pressure.

④ Ease of tightening spring

Tightening of the spring is designed to tighten a hexagonal nut (80J) first followed by the tightening of the spring retainer screw (56A).

⑤ Ease of maintenance

The stem rod, spring retainer, spring and piston are integrated with the upper hexagonal nut (80J) and the lower spindle. O-rings (95A)(42) can be replaced without disassembling parts.

⑥ Correct operation

In general, operation of a rotary type having a larger sliding surface than the rising-lowering type becomes unstable when the conditions of corrosive fluid, etc. become severer. Our diaphragm valve is of the rising-lowering type and that the spindle, compressor and other drive units are separated from the fluid by the diaphragm, ensuring correct operation over an extended period of time.

⑦ Zero valve seat leakage

Elastic diaphragm used for closing the valve seat allows no leakage of fluid containing solids.

⑧ Providing all other features of diaphragm valves

Excellent corrosion and wear resistance	:	Rich selection of material types for the main body and diaphragm
Optimally suitable for vacuum specifications (rubber diaphragm)	:	No gland section exists.
No fluid contamination	:	The diaphragm separates the drive unit.
Ease of maintenance	:	Does not require to remove the main body from the piping for maintenance.

・Selection of Actuator

For the operating pressure 0.4 MPa

— : Max. working pressure for other than the glass-lined and/or porcelain
--- : Max. working pressure for the glass-lined and/or porcelain
—: Max. working pressure for FC(D), SCS, and resin-lined
---: Max. working pressure for hard rubber-, glass-lined and porcelain

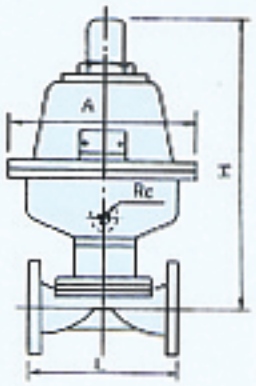
Nominal diameter DN	Actuator code No. HO14N— HOT14N—	Rubber diaphragm Fluid pressure MPa 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4	PTFE diaphragm Fluid pressure MPa 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
15	0841		
20	0841		
	1042		
25	0841		
	1042		
40	1042		
	1243AB		
50	1243AB		
	1644ABC		
65	1644ABC		
	2045ABC		
80	1644ABC		
	2045ABC		
	2545ABC		
100	2045ABC		
	2545ABC		
	3147ABC		
125	2545ABC		
	3147ABC		
150	2545ABC		
	3147ABC		
	4048BC		
200	3147ABC		
	4048ABC		
250	4048ABC		

For the operating pressure 0.2 MPa

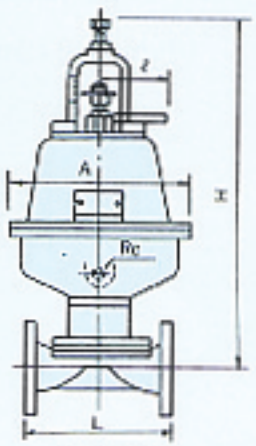
Nominal diameter DN	Actuator code No. HO14N— HOT14N—	Rubber diaphragm Fluid pressure MPa 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4	PTFE diaphragm Fluid pressure MPa 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
15	1040		
	1242		
20	1040		
	1242		
25	1242		
	1644AB		
40	1644AB		
	2045B		
50	1644AB		
	2045B		
	2045C		
65	2045CB		
	2546C		
80	2546C		
	3147AB		
100	2546C		
	3147AB		
	4048C		
125	3147AB		
	4048C		
150	3147AB		
	4048C		
200	4048C		

• Principal Dimensions

Nominal diameter DN	Face-to-face length L mm: Other than rubber-lined	Face-to-face length L mm: Rubber-lined	Actuator code No. HO14N–	Principal dimensions: H: HO	H: HOT HOTH	A	ℓ	Weight: approx.: (kg): HO	HOT	HOTH	Air chamber capacity ℓ
15	102	107	0841	221	359	100	114	4.0	5.3	5.4	0.2
			1040	243	383	122	114	4.4	5.8	5.9	0.3
			1242	319	476	147	167	7.5	9.2	9.8	0.7
20	118	123	0841	217	351	100	114	4.2	5.6	5.7	0.2
			1040	239	379	122	114	4.7	6.1	6.2	0.3
			1042	239	379	122	114	5.1	6.4	6.5	0.3
			1242	315	468	147	167	7.8	9.6	10.2	0.7
25	127	132	0841	229	364	100	114	5.5	6.8	6.9	0.2
			1042	251	390	122	114	6.3	7.6	7.8	0.3
			1242	327	480	147	167	9.0	10.8	11.4	0.7
			1644AB	378	552	188	167	12.5	14.5	15.1	1.6
40	159	165	1042	253	393	122	114	8.4	9.8	9.9	0.3
			1243AB	330	483	147	167	12.2	13.9	14.5	0.7
			1644AB	380	554	188	167	14.7	16.7	17.3	1.6
			2045 B	490	692	262	224	23.4	28.5	29.8	3.1
50	191	197	1243AB	338	491	147	167	14.3	16.0	16.7	0.7
			1644AB	390	563	188	167	16.9	18.9	19.5	1.6
			1644ABC	390	563	188	167	18.6	20.6	21.2	1.6
			2045 B	500	701	262	224	25.6	30.7	32.0	3.1
			2045 C	500	701	262	224	26.9	32.0	33.3	3.1
65	216	222	1644ABC	410	583	188	167	23.5	25.5	26.1	1.6
			2045 C	525	727	262	224	31.4	36.5	37.8	3.1
			2045ABC	525	727	262	224	34.1	39.2	40.5	3.1
			2546 C	630	865	320	238	51.0	58.0	60.9	5.6
80	254	260	1644ABC	418	592	188	167	27.6	29.6	30.2	1.6
			2045ABC	534	736	262	224	38.2	43.3	44.6	3.1
			2546 C	640	874	320	238	55	62	64	5.6
			2546ABC	640	874	320	238	62	69	71	5.6
			3147AB	775	999	396	238	120	131	133	13.2
100	305	313	2045ABC	566	768	262	224	46.9	52	53.3	3.1
			2546 C	672	906	320	238	63	71	73	5.6
			2546ABC	672	906	320	238	70	78	80	5.6
			3147AB	807	1031	396	238	129	140	142	13.2
			3147ABC	807	1031	396	238	142	153	155	13.2
			4048 C	890	1195	495	412	203	223	227	22.6
125	356	364	2546ABC	703	937	320	238	88	95	97	5.6
			3147AB	838	1062	396	238	146	157	159	13.2
			3147ABC	838	1062	396	238	159	171	173	13.2
			4048 C	922	1226	495	412	220	241	245	22.6
150	406	414	2546ABC	725	959	320	238	104	111	113	5.6
			3147AB	860	1084	396	238	162	174	176	13.2
			3147ABC	860	1084	396	238	175	187	189	13.2
			4048 C	944	1258	495	412	236	257	261	22.6
			4048 BC	944	1258	495	412	255	275	279	22.6
200	521	529	3147ABC	952	1280	396	238	248	259	261	13.2
			4048 C	1036	1370	495	412	309	330	334	22.6
			4048ABC	1036	1370	495	412	332	353	357	22.6
250	635	645	4048ABC	1107	1460	495	412	410	431	435	22.6



HO1400N



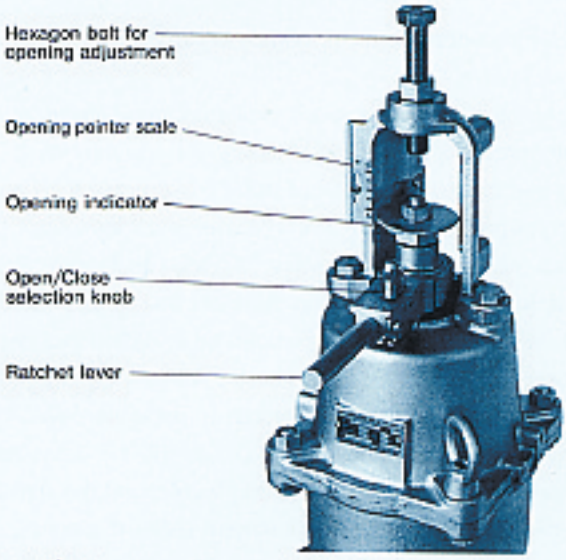
HOT1400N
HOTH1400N

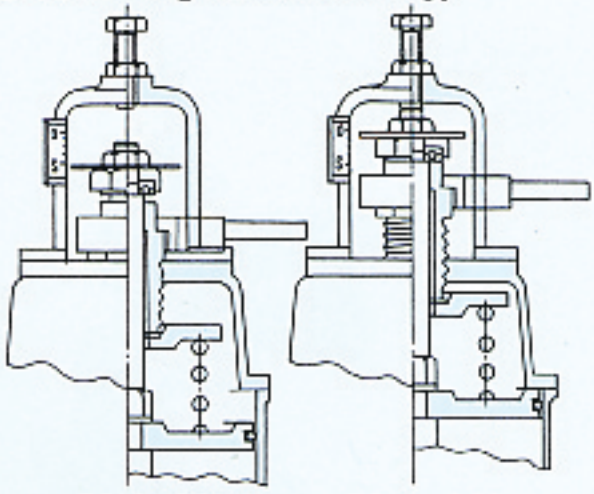
The position of the air intake Rc is to the opposite side of the name plate and the opening pointer scale.

Remarks : 1. All the air intake is Rc1/4.
2. The product weight is for our standard cast iron body of 10K with the flange.
3. Actuator unit type Nos. 0841, 1040 and 1042 with "ℓ=114" are not of the ratchet lever type.

Accessories (Optional)

Manual Operation Mechanism (For Reverse Acting Actuator only)





Function

The ratchet lever is to manually open the valve fully when the valve is "closed" by the force of the "spring." It has no function to adjust the valve opening.
To limit the valve opening for adjusting the flow rate, use the hexagonal bolt at the top.

Feature

Conventional HOL1400 type handle mechanism required heavier operation as the valve nears the fully open state. The ratchet lever system only requires to apply a constant level of force from the start to the fully open state.

Operating method

To fully open the valve, first set the open-close select knob to "O"(OPEN), then reciprocate the lever to right and left. The valve opens gradually.
Conversely, to fully close the valve, set the open-close select knob to "S"(SHUT) and reciprocate the lever to right and left. The valve closes gradually.

Cautions on operation

- Before setting the open-close select knob to either "O" or "S", turn the lever to the desired direction by about 30 degrees, then set the select knob to "O" or "S."
- When the valve is set to "close", make sure that the valve is in fully closed position by checking that the opening indicator points at "S" and the lever is fully lowered downward.
  Neglecting this may cause a leakage from the valve seat.
- When mounting a valve to the piping, set it by guiding the opening pointer scale to face in front.
  The ratchet lever is operable only from the side of the opening pointer scale.

○Ratchet lever system is applicable only to a cylinder diameter of 125 and over of type HOTH1400N. Auxiliary pipe system shall be applied to a cylinder diameters of 80 and 100. The ratchet lever system is not applicable to types HN1400N and HC1400N. No design change is made for the ratchet lever system to use it on other devices.
○The hexagon bolt for adjusting the opening may be changed to a round handwheel by request.

Working time

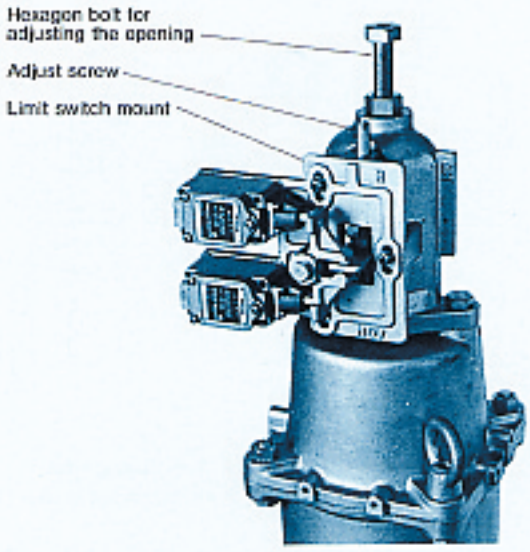
The working time varies by the following conditions. Check them and contact us for consultation:
1. Type of a solenoid to be used (orifice diameter or coefficient of volume)
2. Distance of the conduit from the solenoid valve to the valve air chamber and the conduit inside diameter.
3. Operating pressure
4. Service fluid pressure

Equation for working air consumption

$Q = V\ (10P+1)$

Q : Working air consumption ℓ (Normal)
V : Air chamber capacity ℓ
P : Operating pressure MPa

Limit Switch



○The limit switch mount is commonly applicable to types HO, HC and HN1400N.

○Two types of limit switch are available; rainwaterproof and explosionproof types. Please specify your requirement.

○Standard type limit switch of this company shall be mounted. If you require other type than our standard limit switch, the limit switch mount will be specially designed and manufactured.

○By replacing a part (working plate on the "OPEN" side) of the limit switch mount, the mount can be installed to any nominal diameter irrespective of the valve stroke.

○When the valve opening is limited to a certain level, the limit switch can be adjusted to turn ON at the full open position. To do this, set up a valve opening level using the opening adjust bolt followed by fine adjustment using the adjust screw.

Application List of Accessories

Operating system		Code No.	Function of accessories				Installation of accessories			
			Indicator (indicates the full open state)	Opening pointer scale (yoke type)	Ratchet lever for manual opening	Hexagon bolt for manual closing for opening adjustment	Limit switch	Solenoid valve	Decompression valve with filters	3-piece set (filters, decompression valve and oiler)
Reverse operation type	Spring closed Pressure opened	HO 1400N	○						○	
		HOT 1400N		○		○	○		○	
		HOTH 1400N		○	○	○	○		○	
Normal operation type	Spring opened Pressure closed	HC 1400N	○						○	
		HCT 1400N		○		○	○		○	
Double operation type	Pressure closed Pressure opened	HN 1400N	○						○	
		HNT 1400N		○		○	○		○	

• Limit switch

Type		Rainwaterproof type	Explosionproof type
Type No.		I LSI-J	I LX5001
Rated voltage		10A-125、250、480V	5A-125、250V
		0.8A-125V 0.4A-250V	0.8A-125V 0.4A-250V
Manufacturer		Yamatake-Honeywell	

Note (1) Explosionproof type : JISd2G4

• Solenoid valve

Type	Rainwaterproof type	Explosionproof type
Type No.	4F310-$\frac{08}{10}$-B	4F31CE-$\frac{08}{10}$-TP
Rated voltage	100 VAC, 200 VAC(applicable to both 50/60 Hz)	
Rated pressure	0.1～0.99MPa	
Connection port diameter	Rc 1/4、Rc 3/8	
Effective section	25㎟ (Rc 1/4)、32㎟ (Rc 3/8)	
Manufacturer	CKD	

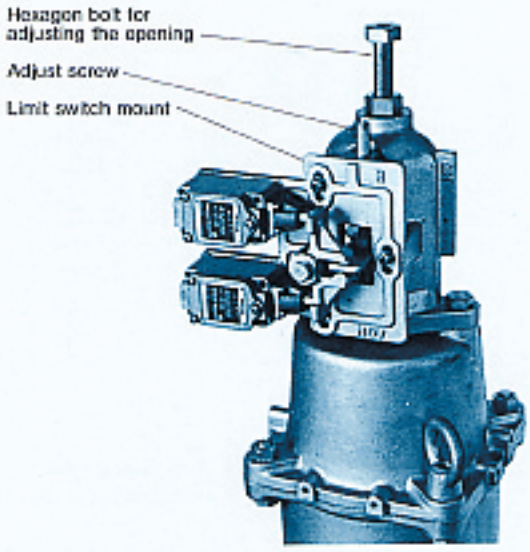
Note (1) Explosionproof type : JISd2G4
Remarks : DC type by requst

• Filter Regulation

Type No.	AW2001-02-CR-X627
Connection port diameter	Rc 1/4
Supply pressure	0.99MPa (Max)
Range of pressure setting	0.05～0.85MPa
Filtration accuracy	5 Micron
Manufacturer	SMC

Remarks : 1. Case guard, with a gauge for 1.0 MPa
2. The filter, decompression valve unit and a 3-pc set can be mounted.
3. Type No. for the 3-pc set reads AC2091-02G-C-X507.

Limit Switch



○The limit switch mount is commonly applicable to types HO, HC and HN1400N.

○Two types of limit switch are available; rainwaterproof and explosionproof types. Please specify your requirement.

○Standard type limit switch of this company shall be mounted. If you require other type than our standard limit switch, the limit switch mount will be specially designed and manufactured.

○By replacing a part (working plate on the "OPEN" side) of the limit switch mount, the mount can be installed to any nominal diameter irrespective of the valve stroke.

○When the valve opening is limited to a certain level, the limit switch can be adjusted to turn ON at the full open position. To do this, set up a valve opening level using the opening adjust bolt followed by fine adjustment using the adjust screw.

Application List of Accessories

Operating system		Code No.	Function of accessories				Installation of accessories			
			Indicator (indicates the full open state)	Opening pointer scale (yoke type)	Ratchet lever for manual opening	Hexagon bolt for manual closing for opening adjustment	Limit switch	Solenoid valve	Decompression valve with filters	3-piece set (filters, decompression valve and oiler)
Reverse operation type	Spring closed Pressure opened	HO 1400N	○						○	
		HOT 1400N		○		○	○		○	
		HOTH 1400N		○	○	○	○		○	
Normal operation type	Spring opened Pressure closed	HC 1400N	○						○	
		HCT 1400N		○		○	○		○	
Double operation type	Pressure closed Pressure opened	HN 1400N	○						○	
		HNT 1400N		○		○	○		○	

• Limit switch

Type		Rainwaterproof type	Explosionproof type
Type No.		I LSI-J	I LX5001
Rated voltage		10A-125、250、480V	5A-125、250V
		0.8A-125V 0.4A-250V	0.8A-125V 0.4A-250V
Manufacturer		Yamatake-Honeywell	

Note (1) Explosionproof type : JISd2G4

• Solenoid valve

Type	Rainwaterproof type	Explosionproof type
Type No.	4F310-$\frac{08}{10}$-B	4F31CE-$\frac{08}{10}$-TP
Rated voltage	100 VAC, 200 VAC(applicable to both 50/60 Hz)	
Rated pressure	0.1～0.99MPa	
Connection port diameter	Rc 1/4、Rc 3/8	
Effective section	25㎟ (Rc 1/4)、32㎟ (Rc 3/8)	
Manufacturer	CKD	

Note (1) Explosionproof type : JISd2G4
Remarks : DC type by requst

• Filter Regulation

Type No.	AW2001-02-CR-X627
Connection port diameter	Rc 1/4
Supply pressure	0.99MPa (Max)
Range of pressure setting	0.05～0.85MPa
Filtration accuracy	5 Micron
Manufacturer	SMC

Remarks : 1. Case guard, with a gauge for 1.0 MPa
2. The filter, decompression valve unit and a 3-pc set can be mounted.
3. Type No. for the 3-pc set reads AC2091-02G-C-X507.

Flange Dimensions

Standard specifications for flange connection are as follows :

Basic dimensions and standard face-to-face dimension for JIS 10K

mm

Nominal diameter DN	Outside diameter D	Thickness t			Bolt hole			Bolt nomination	Raised face (RF)		Standard face-to-face dimension		
											Flange type		Screwed type
		FC	Other than FC	Rubber	Diameter C of center circle	Quantity	Diameter h		g	f	Other than rubber-lined	Rubber-lined	
10	90	13	10	3	65	4	15	M12	46	1	102	107	—
15	95	13	10	3	70	4	15	M12	51	1	102	107	64
20	100	13	10	3	75	4	15	M12	56	1	118	123	83
25	125	13	10	3	90	4	19	M16	67	1	127	132	108
32	135	16	13	3	100	4	19	M16	76	2	159	165	—
40	140	16	13	3	105	4	19	M16	81	2	159	165	140
50	155	19	14	3	120	4	19	M16	96	2	191	197	165
65	175	19	14	3	140	4	19	M16	116	2	216	222	203
80	185	19	14	3	150	8	19	M16	126	2	254	260	254
100	210	22	17	4	175	8	19	M16	151	2	305	313	—
125	250	22	17	4	210	8	23	M20	182	2	356	364	—
150	280	22	17	4	240	8	23	M20	212	2	406	414	—
200	330	25	19	4	290	12	23	M20	262	2	521	529	—
250	400	25	19	5	355	12	25	M22	324	2	635	645	—
300	445	29	22	5	400	16	25	M22	368	3	749	759	—
350	490	32	25	5	445	16	25	M22	413	3	749	759	—
400	560	32	25	5	510	16	27	M24	475	3	838	848	—
450	620	35	29	5	565	20	27	M24	530	3	914	924	—
500	675	38	32	5	620	20	27	M24	585	3	991	1001	—

Remarks :1. The above standard comply with JIS B2210 (basic dimensions of 10K steel pipe flange). The flange thickness t shall comply with BS 10 Part 2-TABLE D (British Standard Class D).

2. The flange thickness t shall be classified as follows :
   FC : Gray casting, ductile steel casting
   Other than FC : Steel casting, stainless steel casting, and bronze casting

3. Packing face
   Standard face shall be flat face.
   The above table shall apply to stainless steel casting, particularly when raised face is specified.
   The standard of this company shall apply to ETFE-, PFA-, and glass-lined material for the main body that constitute a raised face from their manufacturing method.

4. We also manufacture flanges under other standards such as ANSI Class 125, ANSI Class 150, Standards of Japan Water Supply Association, DIN PN10, DIN PN16. The thickness of flanges shall be all as per above-mentioned table.

5. Face-to-face dimension
   Complies with ISO 5752.

Compatibility to the Food Hygiene Law and the Water Supply Rubber Standard

Diaphragms and the rubber-lined bodies of the diaphragm valves manufactured by this company comply with the Food Hygiene Law (Ministry of Health and Welfare Notice Nos. 20 and 85) and Water Supply Rubber Standard (JIS K6353). For further details, contact this company.

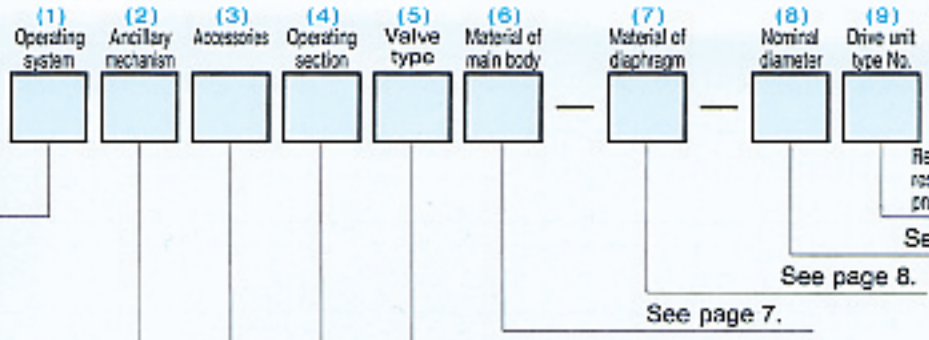
Specifications for Standard Products

1. Name plate
   Round name plate of stainless steel shall be attached to the top surface of handwheel for the manually operated valve or tag type name plate to the drive unit with wire according to your specification.
2. Coating
   Standard coating shall be as follows : Manually operated valves :
   Rust resistant coating (rust color) without top coating
   Automatically operated valves (pneumatical and electric) :
   Rust resistant coating (gray) and silver top coating
   For special coating, please specify details.
3. Photography
   Shall be provided according to the photographic instructions by request.
4. Special inspection with witness
   Inspection with witness (pressure test) by a specific institution such as NV, Lloyd, NK, etc. shall be conducted under a separately estimated price schedule.

Notes on Handling

- Installation :
  1. Valves are non-directional and may be applied by using either side as the entrance port.
  2. Before connecting the valve to the piping, always check for any residual spatters from welding, scales, grits, etc. in the piping. Clean the piping as may be needed.
  3. Tighten the bolts and nuts on the connection flange diagonally, gradually and evenly by avoiding unbalanced tightening.
  4. Bolts and nuts on the flange may be loosened during transportation. Check them before installation to the piping.
- Wiring
  1. Before closing the switch cover, make sure that the gasket is in perfect condition. Clean the mating face and tighten the bolts properly.
  2. Construct the outside leader outlet rainwaterproof.
  3. Don't leave the switch cover open.
  4. Positively avoid wiring work for outside installation on a rainy day.
  5. Since the 3-phase motor direction of rotation is set to the valve opening direction, connect the outside leader as follows :
     (R-U, S-V, and T-W) Check the connection after completing the wiring.

How to Read the Product Code Number



(4) Operating section

Code	Name
None	Manually operated valve
1	ON-OFF operation valve
3	Flow regulator valve
4	Electrically operated valve

(5) Valve type

Code	Name
4	Weir type
5	Straight way type

(3) Accessories

Code	Name	Application range: Manual valve	Application range: ON-OFF valve
MW	Limit switch (2 switches for opening and closing)	○	○
MO	Limit switch (with one switch for opening)	○	○
MS	Limit switch (with one switch for closing)	○	○
E	Electromagnetic valve	–	○
F	Filter	–	○
R	Decompression valve	–	○
V	Decompression valve with filters	–	○
CW	Speed controller, OPEN → CLOSE control	–	○
CO	Speed controller, CLOSE → OPEN control	–	○
CS	Speed controller, OPEN → CLOSE control	–	○
Q	Quick exhaust valve	–	○
B	Equalizing valve (bypass valve)	–	○
T	Terminal box	–	○
S	Silencer	–	○
P	Positioner	–	–

(2) Ancillary mechanism

Code	Name
L	with a lock nut
S	with the opening indicator
G	Gear operated type
H	High pressure bonnet type
D	Double gland type (sealed bonnet)
ES	Extension spindle type
CH	Chain wheel type
T	with the opening limit device
H	with the manual operating device

Option : 1. Specify rainproof or explosion proof type.
2. Specify voltage/Hz

(1) Operating system

Classification	Code	Name
Manual valve	None	Standard handwheel
Pneumatically operated valve	HO	Piston type reverse operation, pressure opened and spring closed
	HC	Piston type normal operation, pressure closed and spring opened
	HN	Piston type double operation, pressure opened and closed
	BO	Rolling diaphragm type reverse operation, pressure opened and spring closed
	BC	Rolling diaphragm type normal operation, pressure closed and spring opened
Electrically operated valve	MRS	Actuators manufactured by Seibu Denki
	M♯S	
	MR	Actuators manufactured by Koso Engineering

Example :

HOTHMW1430-EP-80 refers to :

A piston type reverse operation valve with the opening limit and manual operating devices, with two limit switches for opening and closing, ON-OFF operation weir type hard rubber-lined, material for the main body EPDM rubber diaphragm valve, with the nominal diameter of 80A

◆Material Selection Table

Evaluation code ◎ : Comprehensively recomended material ○ : Applicable material △ : Conditionally applicable material requiring close examination
× : Inapplicable material — : Material of nuknown applicability

Fluid name	Concentration %	Temperature °C	Material of body														Material of diaphragm						
			01	04	05	07	12	13	30	33	35	36	40	59	60	61	80	NR	CR	BG	EP	AB	TX	HP
Sodium nitrite	60	20~60	△	△	△	○	○	○	◎	○	○	○	○	○	○	○	—	○	○	○	◎	○	○	○
		61~80	△	△	△	○	○	○	◎	△	△	△	○	○	○	○	—	○	○	△	◎	×	○	○
Sulfurous acid solution	5	20~60	×	×	×	○	○	○	◎	△	○	△	○	○	○	○	—	○	◎	○	○	△	○	○
		61~80	×	×	×	○	○	○	◎	△	○	△	○	○	○	○	—	×	×	×	×	×	○	×
Sodium sulfite	Under 20	20~60	×	×	×	○	○	○	◎	△	○	△	○	○	○	○	—	○	◎	○	○	△	○	○
		61~80	×	×	×	○	○	○	◎	△	○	△	○	○	○	○	—	○	○	△	◎	×	○	○
Aqueous ammonia	28	20~50	○	○	○	○	○	○	◎	○	○	○	×	○	○	○	—	○	◎	○	○	—	○	—
Ethylene glycol	100	20~60	◎	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	◎	○	○	○	○	○
		61~80	◎	○	○	○	○	○	○	△	△	△	○	○	○	○	○	○	◎	△	○	△	○	△
		81 and over	○	◎	○	○	○	○	○	×	×	×	○	○	○	○	○	×	×	×	△	×	◎	×
Ammonium chloride	35	20~50	×		×	×	×	×	◎	○	○	○	○	○	○	○	—	○	◎	○	○	○	○	○
	55	60	×	×	×	×	×	×	◎	△	△	△	○	○	○	○	—	○	○	△	◎	×	○	○
	77	99	×	×	×	×	×	×	○	×	×	×	○	○	○	○	—	×	×	×	△	×	◎	△
Hydrochloric acid	Under 5	20~60	×	×	×	×	×	×	◎	○	○	○	○	○	○	○	—	◎	○	○	◎	○	○	○
		61~80	×	×	×	×	×	×	◎	×	×	△	○	○	○	○	—	○	△	○	◎	△	○	○
		81~100	×	×	×	×	×	×	×	×	×	×	○	○	◎	○	—	×	×	×	△	×	◎	×
	6~20	20~60	×	×	×	×	×	×	◎	△	×	△	○	○	○	○	—	◎	○	○	○	○	○	○
		61~80	×	×	×	×	×	×	◎	×	×	×	○	○	○	○	—	△	△	△	○	△	◎	△
		81~100	×	×	×	×	×	×	×	×	×	×	○	○	◎	○	—	×	×	×	△	×	◎	×
	21~30	20~50	×	×	×	×	×	×	◎	×	×	△	○	○	○	○	—	○	○	○	◎	△	○	○
		51~70	×	×	×	×	×	×	◎	×	×	×	○	○	○	○	—	△	△	△	○	△	◎	△
		71~90	×	×	×	×	×	×	△	×	×	×	○	○	◎	○	—	×	×	×	×	×	◎	×
	31~35	20~35	×	×	×	×	×	×	○	×	×	×	○	◎	○	—	—	△	×	○	○	×	◎	×
		36~60	×	×	×	×	×	×	○	×	×	×	○	◎	○	—	—	×	×	×	○	×	◎	×
		61~80	×	×	×	×	×	×	○	×	×	×	○	◎	○	—	—	×	×	×	×	×	◎	×
	36	20~35	×	×	×	×	×	×	○	×	×	×	○	◎	○	○	—	×	×	×	○	×	◎	×
		36~70	×	×	×	×	×	×	○	×	×	×	○	◎	○	○	—	×	×	×	×	×	◎	×
Hydrochloric acid (Fuming hydrochloric acid)	37.2 or over	20~35	×	×	×	×	×	×	○	×	×	×	○	◎	○	○	—	×	×	×	×	×	◎	×
		36~60	×	×	×	×	×	×	△	×	×	×	○	◎	○	○	—	×	×	×	×	×	◎	×
Chlorine gas(wet)		20~35	×	×	×	×	×	×	△	×	×	×	○	◎	○	○	○	×	×	×	△	×	◎	△
		36 or over	×	×	×	×	×	×	×	×	×	×	○	◎	○	—	○	×	×	×	×	×	◎	×
Chlorine gas(dry)		20~35	×	×	△	△	△	△	△	×	×	×	○	◎	○	○	—	×	×	×	△	×	◎	△
		36 or over	×	△	△	△	△	△	×	×	×	×	○	◎	○	—	—	×	×	×	×	×	○	×
Sodium chlorate	Under 20	20~50	×	△	—	○	○	○	○	△	△	△	○	○	◎	○	—	△	△	△	○	—	◎	—
		51 or over	×	×	—	○	○	○	×	×	×	×	○	○	◎	○	—	×	×	×	×	—	◎	—
Chlorine water	or over 0.3	20~35	×	×	—	×	×	×	◎	×	×	×	○	○	○	○	○	×	×	×	○	×	◎	×
		36 or over	×	×	—	×	×	×	×	×	×	×	○	◎	○	○	○	×	×	×	×	×	◎	×
Salt water		20	×	×	×	×	×	×	◎	○	○	○	—	○	○	○	—	○	◎	○	○	—	○	○
Acetic acid	Under 5	20~50	×	×	×	○	○	○	◎	△	○	○	×	○	○	○	—	○	◎	○	△	△	○	△
		51~60	×	×	×	○	○	○	◎	△	△	△	×	○	○	○	—	○	○	○	△	×	○	△
		61~80	×	×	×	○	○	○	×	×	×	×	×	◎	○	○	—	×	×	△	×	×	○	×
	6~20	20~35	×	×	×	○	○	○	◎	×	○	×	×	○	○	○	—	×	○	○	×	×	○	×
		36~50	×	×	×	○	○	○	◎	×	×	×	×	○	○	○	—	×	△	○	×	×	○	×
		51~80	×	×	×	○	○	○	×	×	×	×	×	◎	○	○	—	×	×	×	×	×	○	×
	21~40	20~35	×	×	×	○	○	○	◎	×	×	×	×	○	○	○	—	×	×	○	×	×	○	×
		36~50	×	×	×	○	○	○	○	×	×	×	×	◎	○	○	—	×	×	○	×	×	○	×
		51~80	×	×	×	○	○	○	×	×	×	×	×	◎	○	○	—	×	×	×	×	×	○	×
	41~60	20~35	×	×	×	○	○	○	○	×	×	×	×	◎	○	○	—	×	×	○	×	×	○	×
		36~50	×	×	×	○	○	○	△	×	×	×	×	◎	○	○	—	×	×	×	×	×	○	×
		51~80	×	×	×	○	○	○	×	×	×	×	×	◎	○	○	—	×	×	×	×	×	○	×
	61~80	20~35	×	×	×	○	○	○	△	×	×	×	×	◎	○	○	—	×	×	×	×	×	○	×
		35~50	×	×	×	○	○	○	×	×	×	×	×	◎	○	○	—	×	×	×	×	×	○	×
		51~80	×	×	×	○	○	○	×	×	×	×	×	◎	○	○	—	×	×	×	×	×	○	×
	81~95	20~50	×	×	×	○	○	○	×	×	×	×	×	◎	○	○	—	×	×	×	×	×	○	×
		51 or over	×	×	×	○	○	○	×	×	×	×	×	◎	○	○	—	×	×	×	×	×	○	×
	96~100	20~35	×	×	×	○	○	○	×	×	×	×	×	◎	○	○	—	×	×	×	×	×	○	×
		36 or over	×	×	×	○	○	○	×	×	×	×	×	◎	○	○	—	×	×	×	×	×	○	×
Sodium hypochlorite	Under 0.1	20~35	×	×	×	×	×	×	◎	△	△	△	○	○	○	○	—	△	△	△	◎	△	○	○
		36~50	×	×	×	×	×	×	◎	×	×	×	○	○	○	○	—	×	×	△	○	×	○	○
		51~60	×	×	×	×	×	×	◎	×	×	×	○	○	○	○	—	×	×	×	×	×	○	×
	0.11~1.0	20~35	×	×	×	×	×	×	◎	△	△	△	○	○	○	○	—	△	△	△	○	×	○	○
		36~50	×	×	×	×	×	×	○	×	×	×	○	○	◎	○	—	×	×	×	△	×	○	×
		51 or over	×	×	×	×	×	×	×	×	×	×	○	○	◎	○	—	×	×	×	×	×	○	×
	1.1~2.0	20~35	×	×	×	×	×	×	◎	×	×	△	○	○	○	○	—	×	△	△	◎	×	○	○
		36~50	×	×	×	×	×	×	○	×	×	×	○	○	◎	○	—	×	×	×	△	×	○	×
		51 or over	×	×	×	×	×	×	×	×	×	×	○	○	◎	○	—	×	×	×	×	×	○	×
	2.1~5.0	20~35	×	×	×	×	×	×	◎	×	×	△	○	○	○	○	—	×	×	△	◎	×	○	△
		36~50	×	×	×	×	×	×	○	×	×	×	○	○	◎	○	—	×	×	×	△	×	○	×
		51 or over	×	×	×	×	×	×	×	×	×	×	○	○	◎	○	—	×	×	×	×	×	○	×
	5.1~10	20~35	×	×	×	×	×	×	○	×	×	×	○	○	◎	○	—	×	×	×	○	×	○	△
		36 or over	×	×	×	×	×	×	×	×	×	×	○	○	◎	○	—	×	×	×	×	×	○	×

This table is applicable only to the materials used by this company. The data is not applicable to composite chemical solutions. For specific chemicals, contact us.

Evaluation code ◎ : Comprehensively recomend material ○ : Applicable material △ : Conditionally applicable material requiring close examination
× : Inapplicable material — : Material of nuknown applicability

Fluid name	Concentration %	Temperature C	Material of body															Material of diaphragm						
			01	04	05	07	12	13	30	33	35	36	40	59	60	61	80	NR	CR	BG	EP	AB	TF	HP
Sodium hypochlorite	11~13	20~35	×	×	×	×	×	×	△	×	×	×	○	○	◎	○	—	×	×	×	△	×	◎	×
		36 and over	×	×	×	×	×	×	×	×	×	×	○	◎	○	○	—	×	×	×	×	×	◎	×
Nitric acid	Under 0.5	20~35	×	×	×	○	○	○	◎	○	○	○	○	○	○	○	—	○	○	○	◎	○	○	○
		36~50	×	×	×	○	○	○	◎	△	△	○	○	○	○	○	—	○	○	○	◎	△	○	○
		51~80	×	×	×	◎	○	○	×	×	×	×	○	○	○	○	—	×	×	×	○	×	◎	×
		81 and over	×	×	×	◎	○	○	×	×	×	×	○	○	○	○	—	×	×	×	×	×	◎	×
	0.6~10	20~35	×	×	×	○	○	○	◎	×	×	△	○	○	○	○	—	△	△	△	◎	×	○	○
		36~50	×	×	×	○	○	○	○	×	×	×	○	○	○	○	—	×	×	×	◎	×	◎	○
		51 and over	×	×	×	◎	○	○	×	×	×	×	○	○	△	○	—	×	×	×	×	×	◎	×
	11~20	20~35	×	×	×	◎	○	○	△	×	×	×	○	○	○	○	—	×	×	×	○	×	◎	○
		36~50	×	×	×	◎	○	○	×	×	×	×	○	○	○	○	—	×	×	×	○	×	◎	○
		51 and over	×	×	×	◎	○	○	×	×	×	×	○	○	○	○	—	×	×	×	×	×	◎	×
	21~70	20~60	×	×	×	◎	○	○	×	×	×	×	○	○	○	○	—	×	×	×	×	×	◎	×
		61 and over	×	×	×	△	△	△	×	×	×	×	○	◎	△	△	—	×	×	×	×	×	◎	×
Sodium hydroxide (caustic soda)	Under 5	20~60	◎	○	○	○	○	○	○	○	○	○	×	○	○	○	×	◎	○	○	○	○	○	○
		61~80	◎	○	○	○	○	○	○	○	○	○	×	○	○	○	×	○	○	△	◎	△	○	△
		81~100	◎	○	○	○	○	○	○	△	△	△	×	○	○	○	×	×	×	×	△	×	◎	×
	6~10	20~60	◎	○	○	○	○	○	○	○	○	○	×	○	○	○	×	◎	○	○	○	○	○	○
		61~80	◎	○	○	○	○	○	○	○	○	○	×	○	○	○	×	○	○	△	◎	△	○	△
		81~100	◎	○	○	○	○	○	○	△	△	△	×	○	○	○	×	×	×	×	△	×	◎	×
	11~20	20~60	◎	○	○	○	○	○	○	○	○	○	×	○	○	○	×	◎	○	○	○	○	○	○
		61~80	◎	○	○	○	○	○	○	○	○	○	×	○	○	○	×	○	○	△	◎	△	○	△
		81~100	◎	○	○	○	○	○	○	△	△	△	×	○	○	○	×	×	×	×	△	×	◎	×
	21~40	20~60	◎	○	○	○	○	○	○	○	○	○	×	○	○	○	×	◎	○	○	○	○	○	○
		61~80	◎	○	○	○	○	○	○	○	○	○	×	○	○	○	×	△	△	△	◎	△	○	△
		81~100	◎	○	○	○	○	○	○	△	△	△	×	○	○	○	×	×	×	×	△	×	◎	×
	41~50	20~60	○	○	○	○	○	○	◎	○	○	○	×	○	○	○	×	◎	○	○	○	○	○	○
		61~80	○	○	○	○	○	○	◎	○	○	○	×	○	○	○	×	△	△	△	○	△	◎	△
		81~100	○	○	○	○	○	○	◎	△	△	△	×	○	○	○	×	×	×	×	△	×	◎	×
	51~60	20~60	○	○	○	○	○	○	◎	○	○	○	×	○	○	○	×	◎	△	△	○	×	○	○
		61~80	○	○	○	○	○	○	◎	○	○	○	×	○	○	○	×	×	×	×	×	×	◎	△
		81~100	○	○	○	○	○	○	△	×	×	×	×	○	◎	○	×	×	×	×	×	×	◎	×
Phthalic acid(alcohol solution)	Under 10	20~60	△	△	○	○	○	○	△	×	×	×	○	◎	○	○	—	×	×	×	△	—	◎	×
Hydrofluoric acid	Under 1	20~60	×	×	×	×	×	×	○	○	○	◎	×	○	○	○	—	○	○	○	○	○	○	○
		61~80	×	×	×	×	×	×	◎	×	×	△	×	○	○	○	—	△	△	△	◎	×	○	○
	2~5	20~60	×	×	×	×	×	×	○	△	△	◎	×	○	○	○	—	○	○	○	○	○	○	○
		61~80	×	×	×	×	×	×	○	×	×	△	×	○	◎	○	—	△	△	△	○	×	◎	○
	6~9	20~60	×	×	×	×	×	×	○	×	△	◎	×	○	○	○	—	△	△	○	○	×	○	◎
		61~80	×	×	×	×	×	×	△	×	×	△	×	○	◎	○	—	×	×	×	×	×	◎	×
	10~30	20~60	×	×	×	×	×	×	×	×	×	×	×	○	◎	○	—	×	×	×	×	×	○	◎
		61 and over	×	×	×	×	×	×	×	×	×	×	×	○	◎	○	—	×	×	×	×	×	◎	×
	Over 31	20~100	×	×	×	×	×	×	×	×	×	×	×	◎	○	○	—	×	×	×	×	×	◎	×
Polyaluminumchloride(PAC)		20~80	△	△	△	○	○	○	◎	○	○	○	○	○	○	○	—	◎	○	○	○	—	○	○
Sulfuric acid	Under 5	20~60	×	×	×	×	×	×	◎	○	○	○	○	○	○	○	—	○	◎	○	○	○	○	○
		61~80	×	×	×	×	×	×	◎	△	△	△	○	○	○	○	—	○	○	△	◎	△	○	○
		81~90	×	×	×	×	×	△	×	×	×	×	○	○	○	○	—	×	×	×	×	×	◎	×
	6~60	20~60	×	×	×	×	×	×	◎	○	○	○	○	○	◎	○	—	○	○	○	○	△	○	○
		61~70	×	×	×	×	×	×	◎	△	△	△	○	○	◎	○	—	△	○	△	◎	×	○	○
		71~90	×	×	×	×	×	△	×	×	×	×	○	◎	○	○	—	×	×	×	×	×	◎	×
	61~80	20~40	×	×	×	×	×	×	◎	×	×	×	○	○	○	○	—	×	×	△	△	×	◎	○
		41~60	×	×	×	×	×	×	◎	×	×	×	○	◎	○	○	—	×	×	×	×	×	◎	○
		61 and over	×	×	×	×	×	×	×	×	×	×	○	◎	○	○	—	×	×	×	×	×	◎	×
	81~97	20~90	×	×	×	×	×	×	×	×	×	×	○	◎	○	○	—	×	×	×	×	×	◎	×
	Over 98	20~35	◎	○	○	○	○	○	×	×	×	×	○	○	○	○	—	×	×	×	×	×	◎	×
		36 and over	△	△	△	△	△	△	×	×	×	×	○	◎	○	○	—	×	×	×	×	×	◎	×
Fuming sulfuric acid		20	○	○	○	○	○	○	×	×	×	×	○	◎	○	○	—	×	×	×	×	×	◎	×
Phosphoric acid	Under 40	20~40	×	×	×	×	×	×	◎	○	○	○	○	○	○	○	—	◎	○	○	○	○	○	○
		41~60	×	×	×	×	×	×	◎	○	○	△	○	○	○	○	—	◎	○	○	○	○	○	○
		61~80	×	×	×	×	×	×	◎	×	×	×	○	○	◎	○	—	△	△	△	◎	△	○	△
	41~65	20~40	×	×	×	×	×	×	○	◎	○	○	○	○	○	○	—	◎	○	○	○	△	○	○
		41~60	×	×	×	×	×	×	◎	○	○	△	○	○	○	○	—	◎	○	○	○	△	○	△
		61~80	×	×	×	×	×	×	○	×	×	×	○	○	◎	○	—	△	△	△	◎	×	○	×
	66~85	20~40	×	×	×	×	×	×	○	◎	○	○	○	○	○	○	—	◎	○	○	○	△	○	○
		41~60	×	×	×	×	×	×	◎	○	○	△	○	○	○	○	—	◎	○	○	○	△	○	○
		61~80	×	×	×	×	×	×	○	×	×	×	○	○	◎	○	—	△	△	△	○	×	◎	×
	86~100	20~40	×	×	×	×	×	×	◎	○	△	○	○	○	○	○	—	◎	○	○	○	△	○	○
		41~60	×	×	×	×	×	×	◎	△	△	○	○	○	○	○	—	◎	△	△	○	△	○	△
		61~80	×	×	×	×	×	×	○	×	×	×	○	◎	○	○	—	△	×	×	△	×	◎	×

This table is applicable only to the materials used by this company. The data is not applicable to composite chemical solutions. For specific chemicals, contact us.