

# NDV BALL VALVES



**NIPPON DAIYA VALVE Co., Ltd.**

## 1. 2-Way Ball Valve

Fire Safe Type Ball Valve: F100NB  
High Pressure / Large Bore Ball Valve: E(K)100S  
Jacketed Ball Valve: E100JNC  
Extension Stem Ball Valve: FEX100NB

2-Way Ball Valve

## 2. 3-Way Ball Valve

2 Seats 3-Way Ball Valve: E300NB-L2  
4 Seats 3-Way Ball Valve: E300NB-T4/L4  
3 Seats 3-Way Ball Valve: E300N-T3/L3

3-Way Ball Valve

## 3. V-Port Valve

V100ND(NC)

V-Port Valve

## 4. Pneumatically Operated Valve

Pneumatically Operated 2-Way Ball Valve  
Pneumatically Operated 3-Way Ball Valve  
Pneumatically Operated V-Port Valve

Pneumatically Operated Valve

## 5. Electrically Operated Valve

Electrically Operated 2-Way Ball Valve  
Electrically Operated 3-Way Ball Valve  
Electrically Operated V-Port Valve

Electrically Operated Valve

## 6. Special Purpose Ball Valve

High Temperature Ball Valve  
Y-Shaped 3-Way Ball Valve  
Ball Valve for Shield Tunneling Method  
Top Entry Ball Valve

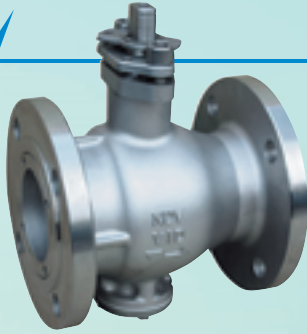
Special Purpose Ball Valve

## 7. Safety Instructions

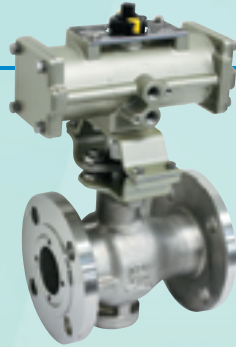
Safety Instructions

For further technical details and specifications, Please contact NDV or local representative.

## ***V-Port Valve***



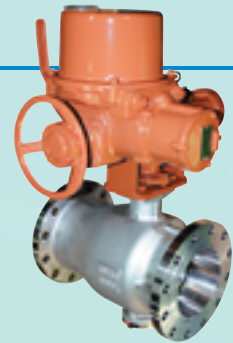
Lever Operated Valve  
V100ND (NC)



Pneumatically Operated ON-OFF Valve  
VPN1100ND (NC)



Pneumatically Operated ON-OFF Valve  
VPN3100ND (NC)



Electrically Operated Valve  
VMS4100ND (NC)

## ***Special Purpose Ball Valve***

### ***High Temperature Ball Valve***



Metal Seat Ball Valve  
F(H)100NB-ST

### ***Y-Shaped 3 Way Ball Valve***



Pneumatically Operated ON-OFF Ball Valve  
YWN1300

### ***Ball Valve for Shield Tunneling Method***



Hydraulically Operated Ball Valve  
EKTON1100N

### ***Top Entry Ball Valve***



Lever Operated Ball Valve  
T100S

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## Electrically Operated Valve

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### Models and Features of Electrically Operated Valve

- SRH Type
- SRJ Type
- SHA Type, SD# Type
- PMK Type

#### 5-1. Electrically Operated 2-Way Ball Valve

- Fire Safe Ball Valve: F□4100NB

#### 5-2. Electrically Operated 3-Way Ball Valve

- 2 Seats 3-Way Ball Valve: E□4300NB-L2
- 4 Seats 3-Way Ball Valve: E□4300NB-T4/L4
- 3 Seats 3-Way Ball Valve: E□4300N-T3/L3

#### 5-3. Electrically Operated V-Port Valve: V□4100ND(NC)

## Models and Features of Electrically Operated Valve

### Applicable Models

Manufacturer	Type	Nominal Size			
		F100NB	E300NB-L2/T4/L4	E300N-T3/L3	V100ND (NC)
Seibu Electric & Machinery	SRH	DN 15 to 150	DN 15 to 150	DN125 to 150	DN 25 to 200
	SRJ	DN 15 to 200	DN 15 to 200	DN125 to 150	DN 25 to 200
	SHA, SD#	DN125 to 200	DN125 to 200	DN125 to 200	—
Kawaden	PMK	DN 15 to 200	DN 15 to 200	DN125 to 200	DN 25 to 200

The products other than above are also available upon request.

### SRH Type (Seibu Electric and Machinery made)

#### Features

- Compact and lightweight actuator using aluminum alloy and engineering plastic.
- Applicable to single-phase AC power.
- No built-in torque switch.
- Motor is protected by built-in thermal protector.
- Manual operation can be done by a spanner. (Interlock switch is not built in.)
- Usable as regulating valve if a seitrroller (electrical positioner) is installed.

#### Specification

##### SRH Torque Actuator

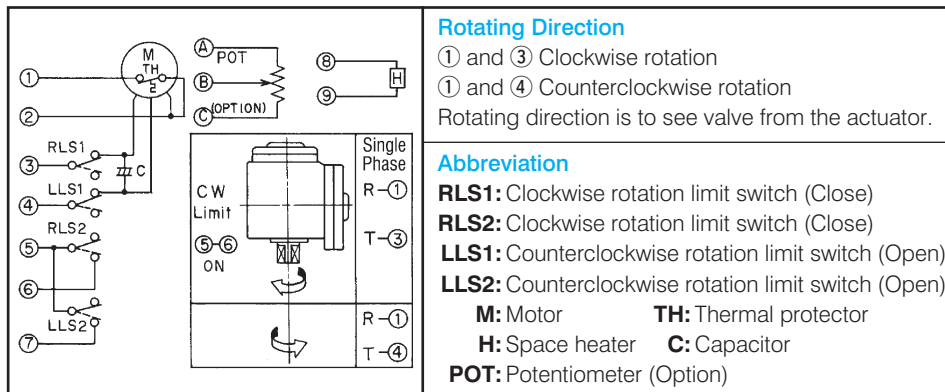
Type	SRH-007	SRH-020	SRH-060	
Maximum Output Torque $N \cdot m$	70	200	600	
Open/Close Time (50/60Hz) $sec./90^\circ$	12/10	12/10	18/15	
Power Supply (50/60Hz) $V$	Single-phase 100/110, 200/220			
Motor	Output $W$	10	40	100
	Thermal Class	Class E		
	Thermal Protector	Incorporated		
Torque Limit Switch	Not incorporated			
Space Heater $W$	5			
Microswitch Contact Capacity	AC250V-5A, DC125V-0.4A (Inductive load)			
Lead Inlet	2-G1/2			
Ambient Temperature	-10°C to 50°C			
Protection Structure	IP55/JPW55 (Outdoor waterproof)			
Terminal	Screw size M3.5 × 12P			
Manual Operation	Manually operable using spanner			

Option: Potentiometer, Seimitter, Seitrroller



Installed Image

### Connecting Diagram



## SRJ Type (Seibu Electric and Machinery made)

### Features

- Compact and lightweight actuator using aluminum alloy. Protection structure is IP68 (Submersible).
- Accommodate either single phase or three phase AC power. (Single phase three wire is not applicable to SRJ1 and 2.)
- Motor is protected by built-in torque switch and thermal protector. Damage by excessive valve torque is also prevented by the torque switch.
- Valve can be operated manually by handwheel and be automatically recovered after power input.
- Explosion proof type (conforming to Ex d II BT4/IEC) is also available.
- Usable as regulating valve if seitrroller (electrical positioner) is installed. (Seitrroller includes Seimitter function.)



Installed Image

### Specification

#### SRJ Torque Actuator

Type		SRJ-010-7	SRJ-010	SRJ-020	SRJ-060	SRJ-1	SRJ-2	
Maximum Output Torque	$N \cdot m$	70	125	250	600	1000	2000	
Open/Close Time (50/60Hz)	sec./90°	18/15					36/30	
Power Supply (50/60Hz)	V	Single-phase 100/110, 200/220 • 3-phase 200/220, 400/440				*		
Motor	Output	40			100		200	
	Thermal Class	Class B						
	Brake	Permanent brake included						
	Thermal Protector	Incorporated						
Torque Limit Switch		Incorporated						
Space Heater	W	5 to 8						
Microswitch Contact Capacity		AC250V-2A, DC125V-0.4A (Inductive load)						
Lead Inlet		3-G1						
Ambient Temperature		-10°C to 50°C						
Protection Structure		IP68 (Submersible)						
Terminal		Screw size M4 × 32P, Motor M4 × 3P						
Manual Operation		With handwheel Automatically recoverable						

Option: Explosion proof (Ex d II BT4), Potentiometer, Seimitter, Seitrroller

\*: Inapplicable to single phase three wire

### Connecting Diagram

#### Rotating Direction

Single-phase: **R-U, T-X** | 3-phase: **R-W, S-V, T-U** Clockwise rotation  
 Single-phase: **R-V, T-X** | 3-phase: **R-U, S-V, T-W** Counterclockwise rotation  
 Rotating direction is to see valve from the actuator.

#### Abbreviation

**RLS1, RLS2:** Clockwise rotation limit switch  
**LLS1, LLS2:** Counterclockwise rotation limit switch  
**RTS1, RTS2:** Clockwise rotation torque switch  
**LTS1, LTS2:** Counterclockwise rotation torque switch  
**M:** Motor      **TH:** Thermal protector  
**H:** Space heater      **C:** Capacitor  
**POT:** Potentiometer (Option)

Switch	Terminal No.	CCW limit	CW limit
RLS 1	1-4	-----	-----
RLS 2	5-6	-----	-----
LLS 1	1-8	-----	-----
LLS 2	9-10	-----	-----

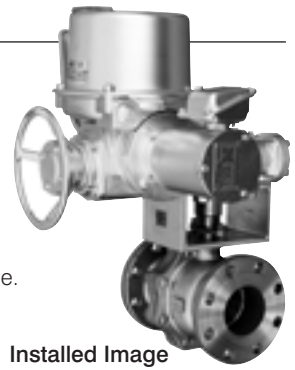
— : Contact ON    ----- : Contact OFF

**13-14:** Overtorque at clockwise limit: ON  
**1-4:** Overtorque at clockwise limit: OFF  
**17-18:** Overtorque at counterclockwise limit: ON  
**1-8:** Overtorque at counterclockwise limit: OFF  
**31-32:** Heater power source terminal  
**27, 28, 29:** Potentiometer terminal

**SHA Type and SD# Type** (Seibu Electric and Machinery made)

**Features**

- Robust actuator with ductile cast iron primary and secondary gear.
- Applicable to 3-phase AC power.
- Motor is protected by built-in torque switch. Damage by excessive valve torque is also prevented by the torque switch. In order to protect motor completely, use of thermal relay at panel is advisable.
- Local control priority and Central control priority are available for manual/automatic changeover.
- Interlock switch is incorporated for local control priority.
- Many other options such as single phase motor, DC motor, regulating valve specification are available.



Installed Image

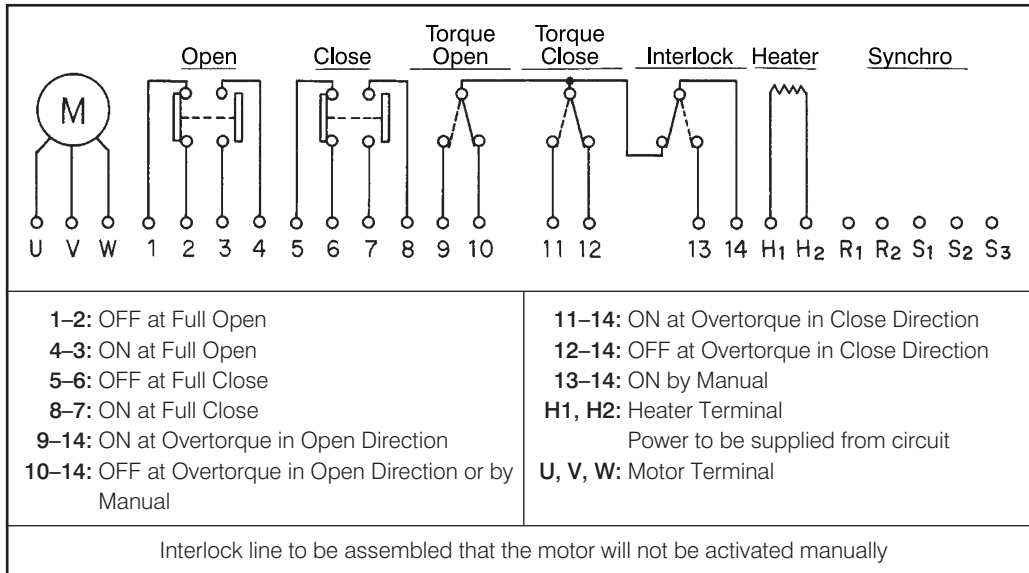
**Specification**

**SHA and SD# Torque Actuator**

Type		SHA-01	SHA-02	SHA-04	SDB-075	SDE-15	SDG-22	
<b>Maximum Output Torque</b>	<i>N · m</i>	Settle according to the specification						
<b>Open/Close Time (50/60Hz)</b>	<i>sec./90°</i>	35/29	35/29	35/29	35/30	35/30	35/30	
<b>Power Supply (50/60Hz)</b>	<i>V</i>	3-phase 200/220, 400/440						
<b>Motor</b>	<b>Output</b>	<i>W</i>	0.1	0.2	0.4	0.75	1.5	2.2
	<b>Thermal Class</b>		Class B					
	<b>Brake</b>		Not incorporated					
<b>Torque Limit Switch</b>		Incorporated						
<b>Space Heater</b>	<i>W</i>		10			30		
<b>Microswitch Contact Capacity</b>		AC250V-5A, DC125V-0.5A (Inductive load)						
<b>Lead Inlet</b>		2-G1, 1-G3/4 (for motor)						
<b>Ambient Temperature</b>		-25°C to 50°C						
<b>Protection Structure</b>		IP55/JPW55 (Outdoor waterproof)						
<b>Terminal</b>		Screw size M4 × 24P, Motor M4 × 3P				Screw size M4 × 24P		
<b>Manual Operation</b>		With manual/electrical changeover lever						

Option: Potentiometer, Seimitter, Motor with brake, Thermal motor

**Connecting Diagram**



2-Way Ball Valve

3-Way Ball Valve

V-Port Valve

Pneumatically Operated Valve

Electrically Operated Valve Models and Features

Special Purpose Ball Valve

Safety Instructions



**PMK Type** (Kawaden made)**Features**

- Compact and lightweight actuator using aluminum alloy.
- Applicable to single phase AC power
- Torque switch is not incorporated.
- Motor is protected by built-in thermal protector.

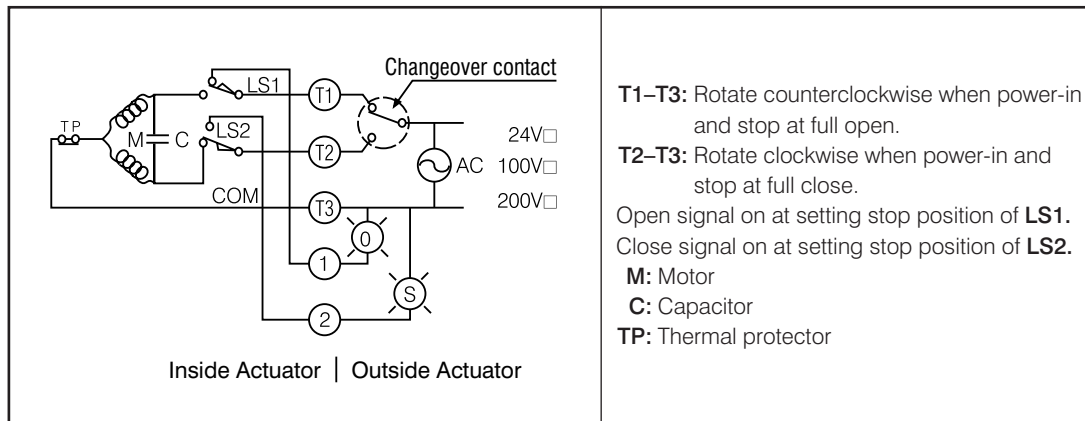


Installed Image

**Specification****PMK Torque Actuator**

Type		PMK-300YS	PMK-600YS	PMK-600YSP	PMK-010SS	PMK-030SS	PMK-060SS	PMK-080SS
Maximum Output Torque	$N \cdot m$	29.4	58.8	68.6	147.1	313.8	588.4	784.5
Open/Close Time (50/60Hz)	sec./90°	8.5/7	8.5/7	12/10	24.5/20	38.5/31.5	57/47	71.5/58.5
Power Supply (50/60Hz)	$V$	Single Phase 100/110, 200/220						
Motor	Output	$W$	20W	25W			40W	
	Thermal Class		Class E	Class B	Class E	Class B		
	Brake		Not incorporated					
Torque Limit Switch		Not incorporated						
Space Heater	$W$	10						
Lead Inlet		1-G1/2			2-G3/4			
Ambient Temperature		-10°C to 50°C						
Protection Structure		IP54 (rainproof)						
Terminal		Screw Size M3 × 8P						
Manual Operation		Actuator bottom axis can be manipulated						

**Options:** Potentiometer, Intermediate switch, Space heater, Limit switch, Torque Limiter

**Connection Diagram**

5-3 Electrically Operated V-Port Valve: V□4100ND(NC)

Valve Codes

Valve Code for V□4100ND(NC)

**VSR4107ND-CF-050-( )-J10KRF**



**1 Actuator** (Electrically Operated Valve)

<b>SR</b>	SRH Type	Seibu Electric and Machinery
<b>MSJ</b>	SRJ Type	
<b>PMK</b>	PMK Type	Kawaden

**2 4**

Electrically Operated Valve

**3 Body Material**

<b>07</b>	SCS13A
<b>12</b>	SCS14A

**4 Seat Material**

<b>ST</b>	Solid (Thick) Seat
<b>M</b>	Thin Seat
<b>CF</b>	Soft Seat

**5 Nominal Size** (DN or A)

Conforming to ISO 6708 and JIS B 2001

**7 Connection**

<b>J10KRF</b>	JIS 10KRF
<b>J20KRF</b>	JIS 20KRF
<b>A150RF</b>	ASME CL150

**\* Improvement Identification Code**

<b>None</b>	Original Design
<b>N</b>	First Improvement
<b>NB</b>	Second Improvement
<b>NC</b>	Third Improvement
<b>ND</b>	Fourth Improvement

**6 Actuator Code**

According to the required actuator specification, 8 numbers code will be applied.

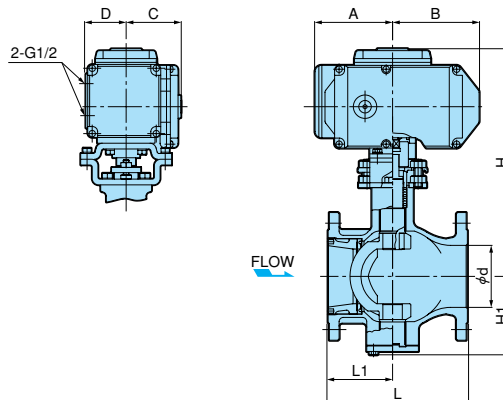
VSR4100ND(NC) (SRH Type Actuator)

Actuator Selection Table

Refer to P37 for selecting rank according to operating condition.

DN	Rank	Shutoff Differential Pressure: MPa														Rank	DN		
		0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8			3.0	
25	A																	A	25
	B																	B	
	C																	C	
40	A																	A	40
	B																	B	
	C																	C	
50	A																	A	50
	B																	B	
	C																	C	
65	A																	A	65
	B																	B	
	C																	C	
80	A																	A	80
	B																	B	
	C																	C	
100	A																	A	100
	B																	B	
	C																	C	
125	A																	A	125
	B																	B	
	C																	C	
150	A																	A	150
	B																	B	
	C																	C	
200	A																	A	200
	B																	B	
	C																	C	

Dimension



Unit: mm

Nominal size DN	Actuator					10K, CL150					20K			
	Code	A	B	C	D	H1	H	d	L	L1	Mass (Approx. kg)			
											L	L1	Stainless Cast Steel	
													10K, CL150	20K
25						48	245.5	25	127	55	9.8	165	55	11.0
40	SRH-007	100	108	75	60	71	274.5	38	165	70	12.8	190	70	14.5
50	SRH-020	121	135	90	63	77	280.0	51	178	75	14.1	216	75	16.5
65	SRH-007	100	108	75	60	96	312.5	64	190	80	19.5	241	80	22.0
80	SRH-020	121	135	90	63	101	323.5	76	203	90	25.0	283	90	29.0
100	SHR-060	158	164	133	85	101	360.5	76	203	90	33.5	283	90	36.5
125	SRH-020	121	135	90	63	131	376.0	102	229	106	33.0	305	106	38.5
150	SRH-060	158	164	133	85	163	449.0	127	356	145	63.5	381	145	69.5
150						173	459.0	152	394	150	74.5	403	150	83.5

Please contact NDV or local representative if specific installing direction for actuator is required.

2-Way Ball Valve

3-Way Ball Valve

V-Port Valve

Pneumatically Operated Valve

Electrically Operated Valve  
V-Port Valve

Special Purpose Ball Valve

Safety Instructions

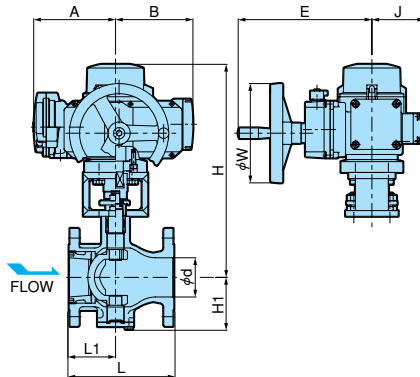
VMSJ4100ND(NC) (SRJ Type Actuator)

Actuator Selection Table

Refer to P37 for selecting rank according to operating condition.

DN	Rank	Shutoff Differential Pressure: MPa											Rank	DN					
		0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2			2.4	2.6	2.8	3.0	
25	A																	A	25
	B																	B	
	C																	C	
40	A																	A	40
	B																	B	
	C																	C	
50	A																	A	50
	B																	B	
	C																	C	
65	A																	A	65
	B																	B	
	C																	C	
80	A																	A	80
	B																	B	
	C																	C	
100	A																	A	100
	B																	B	
	C																	C	
125	A																	A	125
	B																	B	
	C																	C	
150	A																	A	150
	B																	B	
	C																	C	
200	A																	A	200
	B																	B	
	C																	C	

Dimension



Unit: mm

Nominal size DN	Code	Actuator					10K, CL150					20K			
		A	B	E	J	W	H1	H	d	L	L1	Mass (Approx. kg) Stainless Cast Steel	L	L1	Mass (Approx. kg) Stainless Cast Steel
												10K, CL150			20K
25	SRJ-010-7						48	359	25	127	55	20.6	165	55	21.8
40							71	388	38	165	70	23.9	190	70	25.6
50	SRJ-010						77	394	51	178	75	25.2	216	75	27.6
65	SRJ-020						96	442	64	190	80	31.6	241	80	34.1
80	SRJ-010	186	167	272	104	160	101	447	76	203	90	32.6	283	90	35.6
	SRJ-020														
100	SRJ-010						131	484	102	229	106	42.6	305	106	45.1
	SRJ-020							523				48.8			54.3
	SRJ-060	202	191	316	130	245		544				66.7			72.7
125	SRJ-020	186	167	272	104	160	163	566	127	356	145	78.2	381	145	84.2
	SRJ-060	202	191	316	130	245		636				109.6			115.6
150	SRJ-1	240	267	354	191			554				77.7			86.7
	SRJ-020	186	167	272	104	160	173	576	152	394	150	89.2	403	150	98.2
	SRJ-060	202	191	316	130	245		646				120.6			129.6
200	SRJ-1	240	267	354	191			627				122.8			134.8
	SRJ-060	202	191	316	130	245	211	687	203	457	200	155.6	502	200	167.6
	SRJ-2	240	267	354	191										

Please contact NDV or local representative if specific installing direction for actuator is required.

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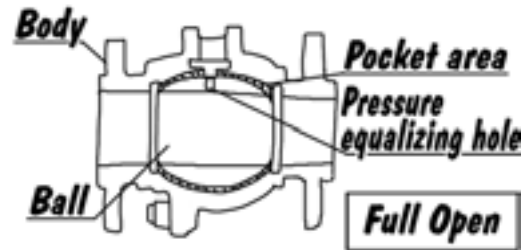
## Safety Instructions

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# Safety Instructions

## 1. Selection of Valves

- 1 Usable ranges for products described on this brochure are limited according to the domestic/international code and standard and NDV standard. Appropriate products must be selected after confirming the usage conditions (fluid, pressure, temperature etc.).
- 2 Materials for the main parts of valves must be selected properly considering working conditions (fluid, temperature etc.).
- 3 Please specify degrease or water proof when issuing order. (Some of the products may not be applicable for degrease or water proof.)
- 4 Soft seat floating ball valve must be used at full open/close position. Usage at intermediate position may cause damages of the surface of ball and/or seat.
- 5 Because of the structure of ball valve, abnormal pressure rise at pocket (\*) occurs if the fluid is liquid and the temperature fluctuates. Ball top is provided with a hole to prevent this abnormal pressure rise. The alternative countermeasure should be taken in case the abnormal pressure rise happens by temperature rise at the pocket during valve full closing. Please consult with NDV or local representative if the case occurs.



\* During valve full OPEN: Space between ball and shell

During valve full CLOSE: Space between ball and shell, Ball bore portion

- 6 Floating ball valve has a mechanism to seal by pushing ball against the seat of the outlet side with fluid pressure. Please consult with NDV or local representative in case that the pressure change is large in operation condition because seat leakage may occur at low pressure operation.
- 7 Please consult with NDV or local representative in case that fluid includes abrasive matter because an abrasion may occur at seat, body or other parts of valve.

## 2. Receipt and Carriage

- 1 Wrapping and packing conditions, products condition and number of goods must be checked and confirmed at the time of the receipt.
- 2 Delivered goods may be heavy depending on the bore size. Unloading and carriage must be done using proper machines and tools according to the relevant law for safety and health. Do not go under lifted goods, do not insert hand or leg below goods and do not operate lifting machine under the lifted goods.
- 3 If packing is by corrugated board, the packing strength will become low when wetted. Handling must be carefully done if the corrugated board is wet.

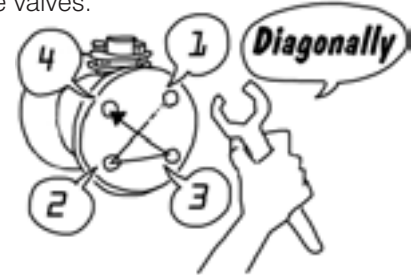
## 3. Storage

- 1 It is recommended to store products under packing condition until installing them to piping.
- 2 If products are stored for some time after unpacking, dust proof seal (cap) at flange face must not be removed.
- 3 Products must be stored under below mentioned conditions in order to avoid rust and/or degradation of materials.
  1. To protect from rain or water
  2. Ambient temperature must be below 50°C  
(The temperature might be different by installed accessories.)
  3. To avoid high humidity and dust atmosphere



## 4. Installation to Piping

- 1 Remove dust proof seal (cap) at connection flange face and confirm that there are no dusts and/or deposits inside. Confirm also that there are no foreign materials inside of the piping after cleaning. Blow off by air or flush by fluid if necessary.
- 2 Ball valves have not a restriction for the flow direction. Install valves to piping considering the position of operation handle and the other necessary issues for safety operation. If flow direction is marked on the valve for some reason such as a protection of abnormal pressure rise, install as directed by the mark.
- 3 Keep a space for overhauling. The space needs necessary area for lifting a complete set of the valve.
- 4 Valves are delivered at full open position unless otherwise specified. Install valves keeping full open position.
- 5 Install valves avoiding strong tension, compression or bending stress to the valves.
- 6 When installing valves, bolts for installation must be tightened diagonally and equally. Unbalanced tightening may cause leakages from connection flanges.
- 7 Confirm that tightening bolts and nuts are not loosened. Retighten them if loosened.
- 8 After installing valves, blowing off by air or flushing by fluid at full open valve condition must be done to clean foreign materials in piping. (Do not close and open valve during blowing off or flushing.)



## 5. Operation

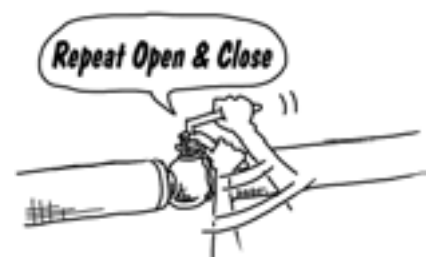
- 1 Do not operate valve with excessive torque by attaching a pipe or a wrench to the lever handle for opening or closing.
- 2 Never put fingers or hands into the inside of valve.
- 3 If there is any leakage from the gland, tighten further the gland bolt. If valve is used for fluid of large temperature change, degree of stress relief of packing is large and therefore, retightening must be done after the temperature once becomes high and falls to low.
- 4 Products may be damaged if remaining fluid in the valve is frozen. If there is a possibility of frozen, heat piping line or clean the inside of valves.

## 6. Pneumactical and Electrical Actuator

- 1 Air vent and electric wiring terminal are fitted with seals. Do not remove the seals until installation to the connections.
- 2 Actuators are delivered after adjustment. Do not disassemble or readjustment. Call NDV or local representative, if some adjustment seems necessary.
- 3 Use air dehumidified and cleaned by filtration.
- 4 Operating pressure and power source must be confirmed by the plate attached to the valve and/or the specification.
- 5 Take care that rain or water will not enter from air hole of the actuator.

## 7. Disassembling and assembling

- 1 Before remove a valve from piping, discharge the fluid in the piping and relieve the pressure. In this occasion, the valve must be opened and closed several times to relieve the pressure in the valve. Special attention must be given if the fluid is hazardous like poisonous or abrasive fluid.
- 2 Be careful not to damage the seal part of ball surface and flange face during disassembling and assembling.







- The ISO 9001 · 14001 certificate was awarded



## CAUTION

Specifications and performance figures of products contained in this catalog are on the design calculations, in-house tests, actual records of product application, and the official standards and specifications. They are presented as the user guide on the use of product concerned under general service conditions. Users intending to use the product under a special condition are required to receive engineering advice from this company in advance or to make their own studies and evaluation to verify performance on their own responsibility. This company shall not be liable for any damages, material or human, that may arise without following this procedure. In as much as full care was taken in editing this catalog, users are kindly requested to make contact with this company for any questions or discrepancies found. This catalog is subject to change without notice for the purpose of correcting error, supplementing or improving insufficient content, updating the content to the improved product performance, design change, discontinuation of product and other reasons. Revised version automatically invalidates catalogs issued prior to the current version. Check the version with our Sales Dept. or local representative before you place orders.

## WARNING

## CAUTION

There are several points to be noticed for the use of ball valve based on the structural characteristics. When valve is delivered, a leaflet for Safety Instructions is in the package. Please read this instruction thoroughly before handling and use of products in order to use them safely and stably for a long time.

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