



# Instruction manual

**Please read this manual before installation and use.**

### GENERAL

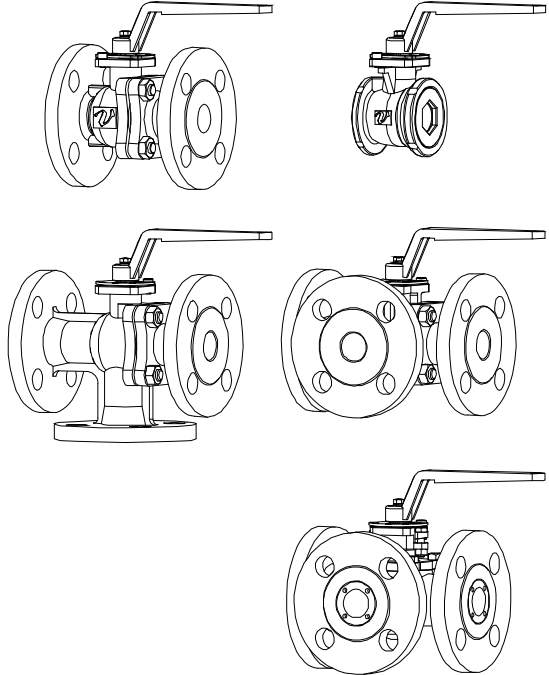
This series is suitable for main or bypass valve in piping system.  
The position of manual handle can be changed.

#### Manual operation

- Valve only
- Lever
- Gear

#### Valve

- BR type For various fluids and general use.
- BS type For Wafer.
- VR type For control.
- TR type For mixing / dividing.
- LR type For mixing / dividing.
- T3 type Trunnion structure. (with flow paths)
- L3 type Trunnion structure.



### PRODUCT CODE

BR type	M A X B R	□	-	□	□	□	□	-	□	□	□	□	-	□	□	
BS type (Full port)	M A X B S	□	-	1	□	□	□	-	□	□	□	□	-	□	□	
(Standard port)	M A X B S	□	-	1	□	□	□	R	□	□	□	□	-	□	□	
VR type	M A X V R	□	-	1	U	U	□	-	□	□	□	□	-	□	□	
(Standard port)	M A X V R	□	-	1	U	U	□	R	0	1	5	-	□	□	□	
TR type	M A X T R	□	-	1	T	T	P	-	□	□	□	□	-	□	□	
LR type	M A X L R	□	-	1	T	T	P	-	□	□	□	□	-	□	□	
T3 type	M A X T 3	□	-	1	T	T	G	-	□	□	□	□	-	□	□	
L3 type	M A X L 3	□	-	1	T	T	G	-	□	□	□	□	-	□	□	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)					
(1) Actuator MAX	(5) Connection 1 : JIS 10K 3 : JIS 20K	(8) Seat material F : F-PTFE G : R-PTFE R : R-F-PTFE P : R-PTFE	(10) Option													
(2) Valve BR BS VR TR LR T3 L3	(6) Body material T : SCS13A U : SCS14A	(9) Size [mm] ex. 25 A → 025	(11) Flow paths (T3) a to d : 3 way valve flow													
(3) Operation 0 : (Zero) Valve only L : With manual lever G : Gear	(7) Ball material T : SCS13A / SUS304 U : SCS14A / SUS316															
(4) Hyphen																

**VALVES SPECIFICATIONS**

Water 
 Oil 
 Air, Gas 
 Steam 
 Chemicals 
 Sea water 
 Slurry 
 Negative pressure

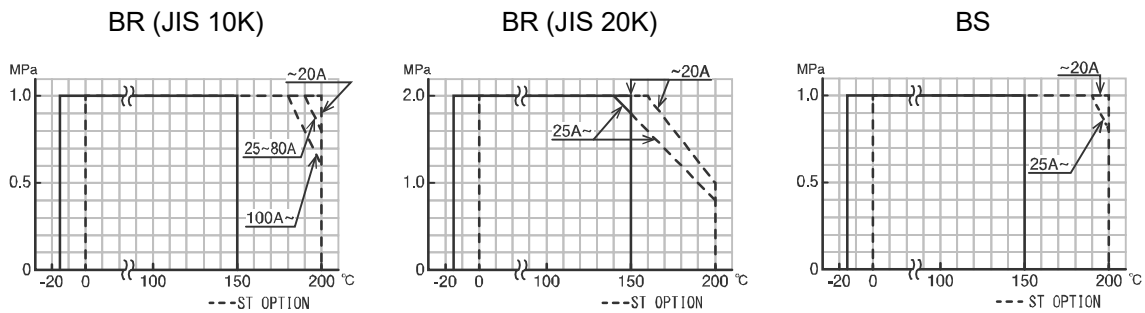
BR BS type

Valve type		BR			BS		
Design		2-way, Full port			2-way, Wafer		
					Full port	Standard port	
Connection		JIS10K Flanged-end	JIS20K Flanged-end		JIS Flanges 10K		
Fluid							
Max pressure		1 MPa		2 MPa	1 MPa		
Size [mm]		015 to 150		015 to 080	015 to 80		R100 to R150
Material	Body	SCS13A	SCS14A	SCS13A	SCS13A	SCS14A	SCS13A
	Ball	SCS13A SUS304	SCS14A SUS316	SCS13A	SCS13A	SCS14A	SCS13A
	Seat	F-PTFE R-PTFE R-F-PTFE			F-PTFE R-PTFE R-F-PTFE		
Stem seal	Packing	R-PTFE			R-PTFE		
	O-ring	FKM			FKM		

The optional for steam fluids.

Valve type	Option code	O-ring
BR BS	ST	Replace (Steam resistant FKM)

**PRESSURE & TEMPERATURE RATING**

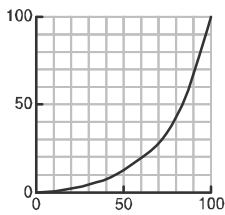


Note) Insulation options are required for use with fluids more than 150 °C.

**INHERENT FLOW CHARACTERISTIC (BS)**

R100 to R150 mm

Cv value (%)



Valve opening (%)

Range ability 30:1

**VALVES SPECIFICATIONS**

Water 
 Oil 
 Air, Gas 
 Steam 
 Chemicals 
 Sea water 
 Slurry 
 Negative pressure

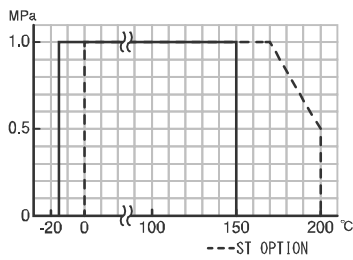
VR type

Valve type	VR		
Design	2-way, V-port		
Connection	JIS10K Flanged-end		
Fluid			
Max pressure	1 MPa		
Size [mm]	R015	015 to 080	
	Material	Body	SCS14A
		Ball	SUS316 SCS14A
		Seat	R-PTFE R-F-PTFE
Stem seal	Packing	R-PTFE	
	O-ring	FKM	

The optional for steam fluids.

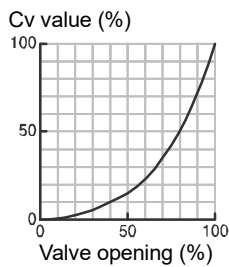
Valve type	Option code	O-ring
VR	ST	Replace (Steam resistant FKM)

**PRESSURE & TEMPERATURE RATING**



Note) Insulation options are required for use with fluids more than 150 °C.

**INHERENT FLOW CHARACTERISTIC**



Range ability

VR-1UUG R 015                      100:1  
 VR-1UUG - 015 to 080              50:1

**VALVES SPECIFICATIONS**

Water 
 Oil 
 Air, Gas 
 Steam 
 Chemicals 
 Sea water 
 Slurry 
 Negative pressure

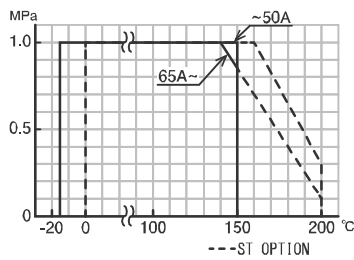
TR LR type

Valve type		TR LR	
Design		3-way, Full port	
Connection		JIS10K Flanged-end	
Fluid			
Max pressure		1 MPa	
Size [mm]		020 to 040	050 to 100
Material	Body	SCS13A	
	Ball	SUS304	SCS13A
	Seat	R-PTFE	
Stem seal	Packing	R-PTFE	
	O-ring	FKM	

The optional for steam fluids.

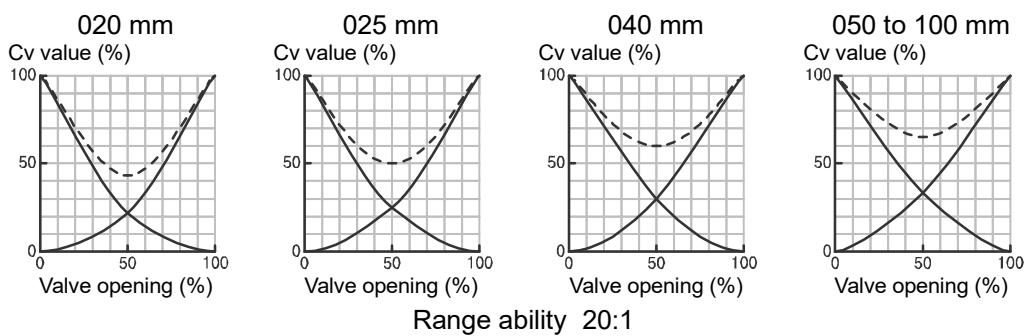
Valve type	Option code	O-ring
TR LR	ST	Replace (Steam resistant FKM)

**PRESSURE & TEMPERATURE RATING**

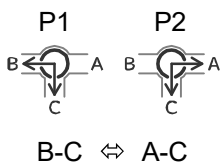


Note) Insulation options are required for use with fluids more than 150 °C.

**INHERENT FLOW CHARACTERISTIC**



**FLOW PATHS (Position① / P1) (Position② / P2)**



Note) When a closed path is exposed to high pressure, it may leak slightly to an open path.

**VALVES SPECIFICATIONS**

Water 
 Oil 
 Air, Gas 
 Steam 
 Chemicals 
 Sea water 
 Slurry 
 Negative pressure

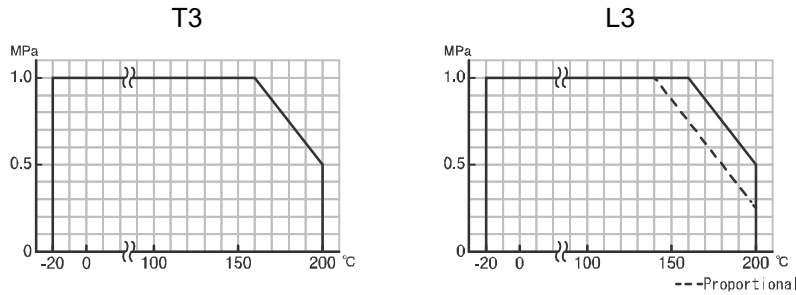
T3 L3 type

Valve type	T3 L3	
Design	3-way, Full port	
Connection	JIS10K Flanged-end	
Fluid		
Max pressure	1 MPa	
Size [mm]	025 to 150	
Material	Body	SCS13A
	Ball	SCS13A
	Seat	R-PTFE
Stem seal	Packing	PTFE

The optional for steam fluids.

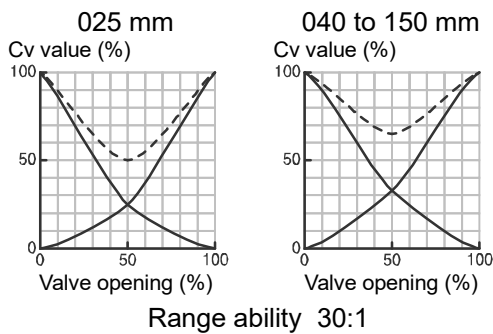
Valve type	Option code	O-ring
T3 L3	ST-VF	Add (Steam resistant FKM)

**PRESSURE & TEMPERATURE RATING**



Note) Insulation options are required for use with fluids more than 170 °C.

**INHERENT FLOW CHARACTERISTIC (L3)**



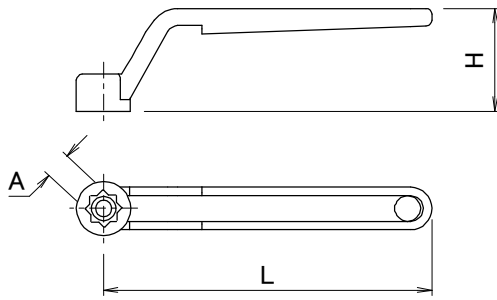
**FLOW PATHS (Position① / P1) (Position② / P2)**

T3				L3
Code: a	Code: b	Code: c	Code: d	
<p>A-B ⇔ B-C</p>	<p>A-C ⇔ A-B</p>	<p>B-C ⇔ A-B-C</p>	<p>A-B-C ⇔ A-C</p>	<p>B-C ⇔ A-C</p>

**INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS**

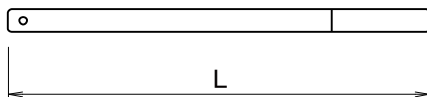
**MANUAL LEVER DIMENSIONS**

①CASTING LEVER



Valve size [mm]			Lever [mm]			Hex bolt
BS	BR VR TR LR L3	T3	L	H	A	
015 020	015 020	-	115	36	9	M5×15
025 032	025 032	025	145	46	11	
040 050	040 050	040	220	52	14	M6×15
065 080 100	065 080	050 065	320	55	17	M8×15
125 150	100 125	080 100	430	60	22	M10×20

②PIPE LEVER



Valve size [mm]		Lever [mm]	Knob bolt
BR L3	T3	L	
150	125 150	750	M10×25

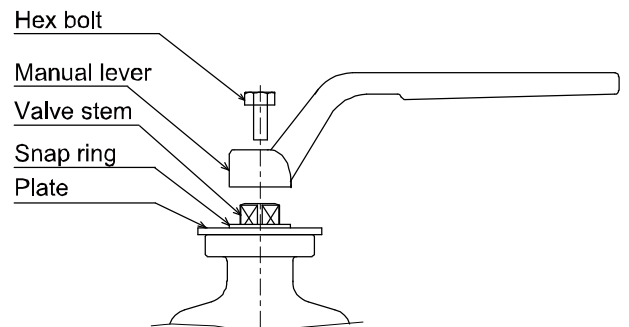
**HANDLING OF MANUAL LEVER**

①Attention

- The lever handle is removed and shipped.
- The lever mounting direction can be changed in units of 45 degrees.
- Do not apply excessive torque to the lever.
- Do not strike or extend the lever with a tool.
- The arrow on the plate indicates the direction of flow.

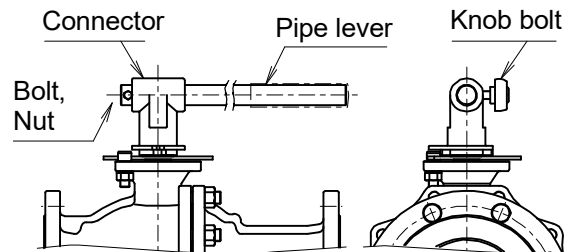
②LEVER HANDLE INSTALLATION (Casting lever)

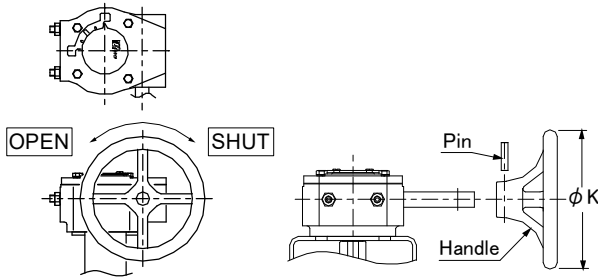
- Plate of position indicator is attached on the valve by C-type snap ring. Install the manual lever on it tightening the bolt.
- The position of manual lever can be changed according to piping circumstances.



③LEVER HANDLE INSTALLATION (Pipe lever)

- Remove the bolt and nut from the lever.
- Loosen the knob bolt. Insert the lever into the connector.
- Tighten the bolts so that the lever does not fall off.
- Fix the lever with the knob bolt.



**INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS****GEAR DIMENSIONS**

Valve size [mm]			$\phi K$ [mm]	Actuator
BS	BR VR TR LR L3	T3		
065 080 100	065 080	050 065	150	MAG-F07
125 150	100 125	080 100	300	MAG-F10
-	150	125 150	300	MAG-F12

**HANDLING OF GEAR**

- The handle wheel of the gear is removed and shipped.
- Insert the handle into the gear shaft.
- Insert a pin into the hole in the handle.

**INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS**

**HANDLING & STORAGE**

①HANDLING

Do not drop or throw the product as it may break.

②STORAGE

- Store away from dust, moisture and direct sunlight. If possible, store in the original package.
- Do not remove a dust proof cap until the piping.

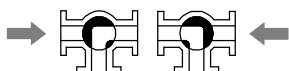
③CHECKING

- Check the product code before installation.
- Make sure that the bolts are not loose.

**INSTALLATION**

①PRECAUTIONS

- Flush the pipeline carefully before installing the valve. Foreign particles, such as sand or pieces of welding electrode, will damage the ball and seats.
- For valves with specified flow direction (VR) or with ST / SC option, check the arrows on the product before piping.
- When the flow path is subjected to a high pressure from arrow, it may leak slightly to the low pressure port. (TR, LR)



②PIPING FLANGES

- Gasket should be selected appropriately to suit the fluid, pressure and temperature. Use spring washer to prevent from decreasing surface pressure gasket when the temperature change happens frequently.
- Tighten all bolts using crossover method to load the joint evenly.
- Wafer type ball valve is put between two seats of flanged-end and tightened with long bolts. (BS)

③ENVIRONMENT

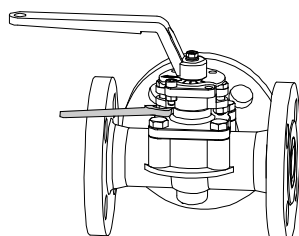
If there is a possibility that the fluid and drive part freeze, please take measures to prevent freezing.

④POSITIONING

Should be positioned through 90° upward from horizontal. Provide space around the product to allow manual operation, inspection and replacement work.

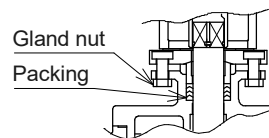
⑤CAUTIONS FOR MAINTENANCE (T3, L3)

Do not keep warm for maintenance of the valve gland.



**TIGHTEN THE GLAND NUTS (T3, L3)**

- Check that there is no leakage from the gland packing.
- If it leakage, tighten gland nuts by alternately. Do not over-tighten the gland nuts.



Valve size [mm]		T Recommended torques [N·m]
T3	L3	
025	025	3.5
040	040 050	7
050 065	065 080	10
080 100	100 125	14
125 150	150	20

**MAINTENANCE**

Do the routine maintenance at least once in half a year.

Inspection items

- Confirm operation of opening and closing.
- Confirm whether screws are loose or not.
- Confirm the fluid temperature or pressure.
- Confirm the leak from valve stem.
- Confirm the bolt tightening torque.

**INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS****TROUBLESHOOTING**

Problem	Cause	Solution
Stop in the mid position.	<ul style="list-style-type: none"> <li>• Biting of valve seat.</li> <li>• The scale has adhered to the valve ball.</li> </ul>	Remove a foreign object.
Leakage from valve body	<ul style="list-style-type: none"> <li>• Valve cap get loose.</li> <li>• Valve body is damaged.</li> </ul>	Replace the valve.
Leakage from valve seat	Seat is worn or damaged.	Replace the valve. Replace the seat.
Leakage from valve stem	Stem packing is worn or distorted.	Replace the valve. Replace the packing.
Leakage from valve gland	Gland packing is worn or distorted.	Tighten the gland nut.
T3 L3		Replace the gland packing.

For more information contact  
NIPPON VALVE CONTROLS, INC. for consultation.