History

1910 The Tobata Foundry Co., which later became the Tobata Works, established. This was the first modern malleables manufacturing facility in Japan.
1922 Kizugawa Manufacturing, which later became the Kuwana Works, established as a plant specializing in fittings. Purchased in 1926 by the Tobata Foundry Co.
1935 Name of the Tobata Foundry Co. changed to Kokusan Industries, Ltd.
1937 Kokusan Industries, Ltd. purchased by Hitachi, Ltd.
1956 Hitachi Metals Industries, Ltd. established (Capital: ¥1 billion provided by Hitachi, Ltd.).
Hitachi, Ltd., transferred its metals business and five plants to Hitachi Metals Industries, Ltd.
(Tobata, Fukagawa, Kuwana, Wakamatsu, and Yasugi), and business activities began.
1965 Hitachi Metals America, Ltd., established in the United States.
1967 Merged with Hitachi Metals, Ltd., to change par value of shares and company name.
1970 Hitachi Metals Europe GmbH established in Germany.
1979 Hitachi Metals Singapore Pte. Ltd. established in Singapore.
1991 Recognized as ISO9002 Quality Management System(Kuwana Works).
1999 Recognized as ISO14001 Environment Quality Management System(Kuwana Works).
2003 Revised as ISO9001 Quality Management System(Kuwana Works).
2015 Hitachi Metals Korea Co., Ltd. established.
2023 Company name changed from Hitachi Metals, Ltd. to Proterial, Ltd.
2024 Kuwana Metals, Ltd. established with the transfer of Proterial's piping components business unit to Okaya & Co., Ltd.

Product Warranty

Within eighteen months of completion inspection or within twelve months of the start of usage, whichever is shortest, Kuwana Metals, Ltd. will repair or replace products or the faulty components of products free of charge in the event of failure under normal usage attributable to inadequate design or manufacturing on the part of Kuwana Metals, Ltd. However, repairs or replacements will be charged in any of the following cases. Also note that if a separate agreement is in effect, that agreement shall take precedence.

(1) When the product has been used in an incorrect manner which deviates from the catalog or instruction manual;
(2) When the product failure is due to careless handling such as jamming with foreign substances or the sticking of excessive water stains;
(3) When the product has been disassembled, repaired or altered by a third party other than Kuwana Metals, Ltd.;
(4) When the product has been subject to causes beyond the control of Kuwana Metals, Ltd. including natural disasters such as wind or flood damage, earthquakes and electrical storms, fire, pollution (special environments), salt damage, war or acts of terror;
(5) When a failure is due to any other factor not deemed to be the responsibility of Kuwana Metals, Ltd.
Damage caused by use, failure, defect, etc. of the product are excluded from the scope of warranty by Kuwana Metals, Ltd.

- The product specifications, performance values and prices listed in this catalog are based on general conditions of use and are intended as guidelines for selecting models. Please confirm product specifications and conditions including fluids, temperatures and pressures before selecting a product.
- The products listed in this catalog are not designed or manufactured for applications that require a special quality level, such as medical equipment, nuclear generation facilities or airplanes.
- The products listed in this catalog are designed to be used within Japan. When exporting the products, the exporter will need to obtain an export license from the Ministry of Economy, Trade and Industry based on the provisions of the Export Control Order under the Foreign Exchange and Foreign Trade Act.
- Please note that to improve this catalog, the contents may be changed or revised without prior notice. Please be aware that product catalogs published prior to such revisions are not valid.
- The contents of this catalog are copyright of Kuwana Metals, Ltd. Duplication without permission is strictly prohibited. For inquiries, please contact your nearest Kuwana Metals, Ltd. sales office.
- When using a product listed in this catalog, please follow the precautions listed in its instruction manual and use it properly.

Agent

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Catalog KM-V-EN-03
Edition dated April 2025 (T-PDF)

Catalog

KUWANA METALS

GOURD BRAND

Segment Ball Valves

Eccentric Stem designed

- Manual operation
- With Electric actuator "Hi TORK"
- With Air cylinder

Our product ; "Hi TORK" is an electric valve equipped with an electric actuator.

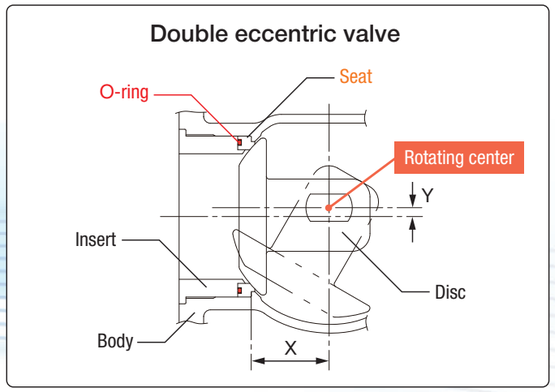
Kuwana Metals, Ltd.

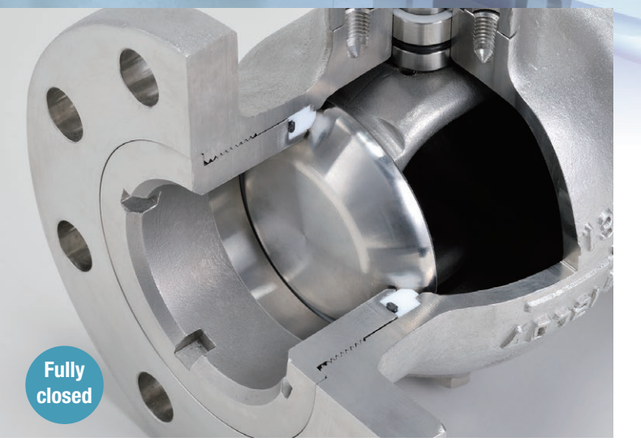
GOURD BRAND

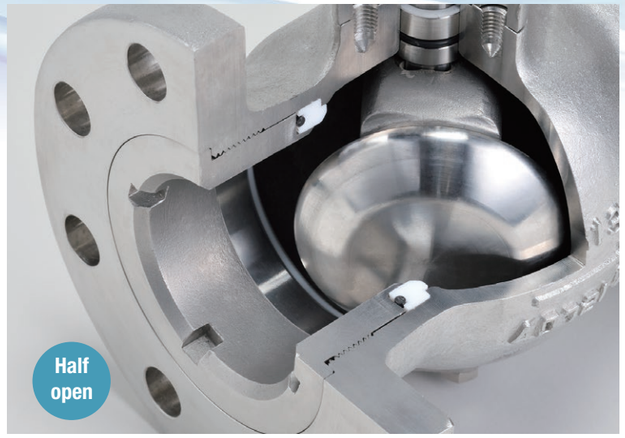
Segment Ball Valves

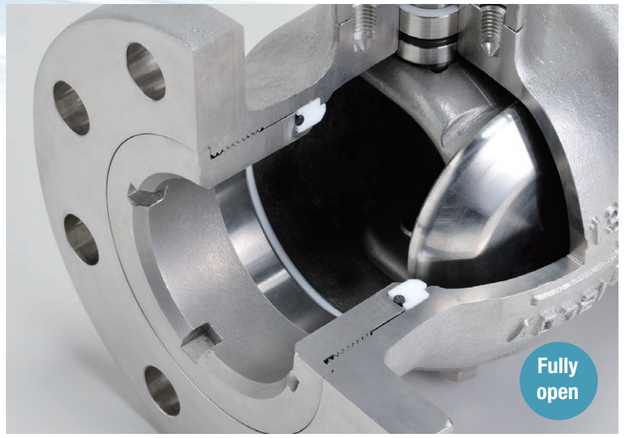
These stainless segment ball valves feature eccentric stem designed excellent sealing performance, helping to reduce the lifecycle cost.

They have been used for fluids containing foreign substances.
Please feel free to contact us for more information.





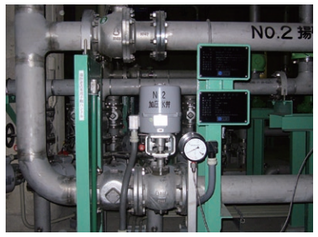




*These photographs are for illustrative purposes only.
Actual products may differ from the photographs.

Hygienic, stable operation	The valve does not have a pocket, which prevents fluid from standing and keeps the valve hygienic. It features a structure that makes it difficult for fluid to be retained in the valve or adhere to it. This ensures stable operation.
Reduced load on the seat	The disc is pressed against the seat only when the valve is closed. This structure makes it possible to reduce the load on the seat.
Control of torque increase	The structure makes it possible to control the torque increase even when the valve is not operated for a set period of time. It also permits control of torque increase with a slurry fluid. (Please consult us if you plan to use a slurry fluid.)
Easy control	It allows for simplified fluid control when the valve is half open.
Automatic operator	The automatic operator comes with "Hi TORK" electric motor-operated valve and an air cylinder and allows you to add a wide variety of options. It permits manual control in the case of an emergency. "Hi TORK" electric motor-operated valve is also available in specifications that allow it to endure flooding for a short period.

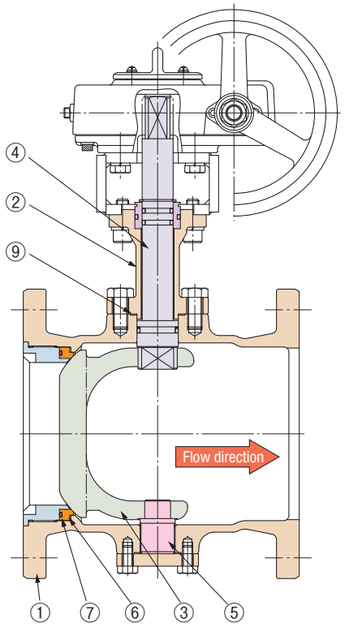
Installation examples

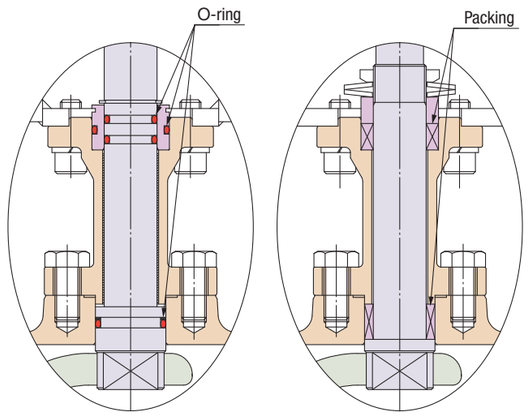


Contents

Structure

■ Manual

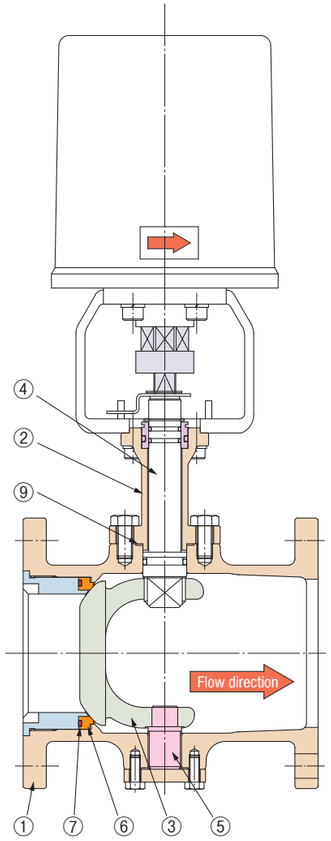


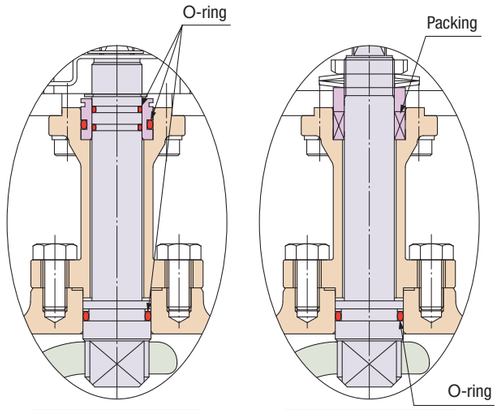


⑧Gland seal

			Gland O-ring structure (for water)		Gland packing structure (for chemicals)			
					Standard specifications		High temperature specifications	
Nominal pressure			10K	20K	10K	20K	10K	20K
Model No.			U10FW	U20FW	U10FWG	U20FWG	U10FWGP	U20FWGP
Material	①	Body	SCS13A					
	②	Cover	SCS13A					
	③	Disc	SCS13A					
	④	Stem	SUS304					
	⑤	Pin	SUS304					
	⑥	Seat	PTFE		PTFE		FT Seat	
	⑦	Seal on the back side of the seat	NBR (O-ring)		Fluorine-contained rubber + FEP coating (O-ring)		FFKM (O-ring)	
	⑧	Gland seal	NBR (O-ring)		Reinforced PTFE		Reinforced PTFE	
	⑨	Gasket	Non-asbestos		Reinforced PTFE		Expanded graphite	

■ Electric/Air cylinder





⑧Gland seal

			Gland O-ring structure (for water)		Gland packing structure (for chemicals)			
					Standard specifications		High temperature specifications	
Nominal pressure			10K	20K	10K	20K	10K	20K
Model No.	Electric		BU1FW□*1	BU2FW□*1	BU1FWG□*1	BU2FWG□*1	BU1FWGP□*1	BU2FWGP□*1
	Air cylinder	Casting	CK(S)-BU1FW	CK(S)-BU2FW*2	CK(S)-BU1FWG*2	CK(S)-BU2FWG*2	CK(S)-BU1FWGP*2	CK(S)-BU2FWGP*2
Material	①	Body	SCS13A					
	②	Cover	SCS13A					
	③	Disc	SCS13A					
	④	Stem	SUS630-H1025 (250A or higher SUS304)					
	⑤	Pin	SUS304					
	⑥	Seat	PTFE		PTFE		FT Seat	
	⑦	Seal on the back side of the seat	NBR (O-ring)		Fluorine-contained rubber + FEP coating (O-ring)		FFKM (O-ring)	
	⑧	Gland seal	NBR (O-ring)		Fluorine-contained rubber + Reinforced PTFE		FFKM (O-ring) + Reinforced PTFE	
	⑨	Gasket	Non-asbestos		Reinforced PTFE		Expanded graphite	

*1: The voltage code is entered in □. The code is "1" for AC100V, and "2" for AC200V.
*2: The symbol S is added when there is a single-acting cylinder with an airless closure.

Product List

			Gland structure	Specification	Nominal pressure	Maximum operating temperature	Connection	Product Code	Production range														Rating
									15(A)	20(A)	25(A)	32(A)	40(A)	50(A)	65(A)	80(A)	100(A)	125(A)	150(A)	200(A)	250(A)	300(A)	
Manual			O-ring	Standard	10K	80℃	Flanged (F.F.)	U10FW								Gear-operated							R-01
					20K		Flanged (R.F.)	U20FW									Gear-operated						R-01
			Packing	Standard	10K	120℃	Flanged (R.F.)	U10FWG	Lever handle							Gear-operated							R-02
					20K		Flanged (R.F.)	U20FWG									Gear-operated						R-02
				High temperature	10K	183℃	Flanged (R.F.)	U10FWGP	Lever handle							Gear-operated							R-03
					20K		Flanged (R.F.)	U20FWGP									*1						
"Hi TORK" Electric Actuator			O-ring	Low differential pressure	10K	80℃	Flanged (F.F.)	BU1FW□*4						M3B			M5B		M10B		M11B	*3	R-01
				High differential pressure			Flanged (F.F.)	BU1FWH□*4						M3B		M5B		M10B		M11B	*2	*3	R-01
				Standard	20K		Flanged (R.F.)	BU2FW□*4									M10B		M11B				R-01
			Packing	Standard	10K	120℃	Flanged (R.F.)	BU1FWG□*4						M3B		M5B		M10B		M11B			R-02
					20K		Flanged (R.F.)	BU2FWG□*4									M10B		M11B				R-02
				High temperature	10K	183℃	Flanged (R.F.)	BU1FWGP□*4						M3B		M5B		M10B		M11B			R-03
					20K		Flanged (R.F.)	BU2FWGP□*4									*1						
Air Cylinder	Double-acting		O-ring	Low differential pressure	10K	80℃	Flanged (F.F.)	CK-BU1FW						H1C	H2C		H3C		H4		H5	*1	R-01
				High differential pressure			Flanged (F.F.)	CK-BU1FWH							H2C	H3C		H4			H5	*1	R-01
				Standard	20K		Flanged (R.F.)	CK-BU2FW									H4		H5				R-01
			Packing	Standard	10K	120℃	Flanged (R.F.)	CK-BU1FWG	H1C					H2C		H3C		H4					R-02
					20K		Flanged (R.F.)	CK-BU2FWG									H4		H5				R-02
				High temperature	10K	183℃	Flanged (R.F.)	CK-BU1FWGP	H1C					H2C		H3C		H4					R-03
					20K		Flanged (R.F.)	CK-BU2FWGP									*1						
	Single-acting		O-ring	Low differential pressure	10K	80℃	Flanged (F.F.)	CKS-BU1FW						H1SC	H2SC		H3SC		H4S		H5S	*1	R-01
				High differential pressure			Flanged (F.F.)	CKS-BU1FWH							H2SC	H3SC		H4S		H5S	*1		R-01
				Standard	20K		Flanged (R.F.)	CKS-BU2FW									H4S		H5S				R-01
			Packing	Standard	10K	120℃	Flanged (R.F.)	CKS-BU1FWG	H1SC					H2SC		H3SC		H4S		H5S			R-02
					20K		Flanged (R.F.)	CKS-BU2FWG									H4S		H5S				R-02
				High temperature	10K	183℃	Flanged (R.F.)	CKS-BU1FWGP	H1SC					H2C		H3SC		H4S		H5S			R-03
					20K		Flanged (R.F.)	CKS-BU2FWGP									*1						

- When the nominal pressure is 20K-200A, the maximum allowable working pressure is 2.0 MPa.
- For electric valves, special production of spring return valves is also available. For inquiries about detailed specifications, such as which sizes can be manufactured, please contact our sales office.
- Special production of valves with a metal seat is also available. For inquiries about detailed specifications, such as which sizes can be manufactured, please contact our sales office.
- For cylinder valves, special production of aluminum cylinders is also available. For inquiries about detailed specifications, such as which sizes can be manufactured, please contact our sales office.

*1: Individual customization is available for the requested specification conditions.
*2: The operator for the 250A electric valves (with specifications for high differential pressure) is LTKD-01+BRM2F from Seibu Electric & Machinery Co., Ltd.
*3: The operator for the 300A electric valves (with specifications for high/low differential pressure) is LTKD-01+BRM4F from Seibu Electric & Machinery Co., Ltd.
*4: The voltage code is entered in □. The code is “1” for AC100V, and “2” for AC200V.

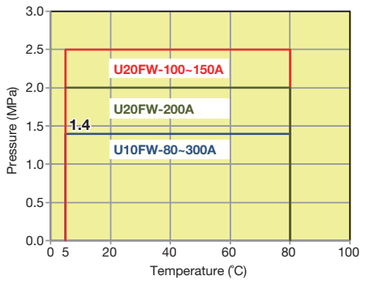
Specifications

		Gland O-ring structure (for water)		Gland packing structure (for chemicals)			
				Standard specifications		High temperature specifications	
Nominal pressure		10K	20K	10K	20K	10K	20K
Model No.	Manual	U10FW	U20FW	U10FWG	U20FWG	U10FWGP	U20FWGP
	Electric	BU1FW□*1	BU2FW□*1	BU1FWG□*1	BU2FWG□*1	BU1FWGP□*1	BU2FWGP□*1
	Air-cylinder valve (casting)	CK(S)-BU1FW	CK(S)-BU2FW	CK(S)-BU1FWG	CK(S)-BU2FWG	CK(S)-BU1FWGP	CK(S)-BU2FWGP
Conditions	Fluid temperature	5～80℃		0～120℃ (No freezing)		0～183℃ (No freezing)	*2
	Flow rate	Max：3m/s (When the valve is fully open)					
	Flow direction	Limited (See the arrows in the illustrations.)					
Rating		R-01		R-02		R-03	*2

*1: A code for voltage is entered in □. The code is "1" for AC100V, and "2" for AC200V.
*2: Individual customization is available for the requested specification conditions.

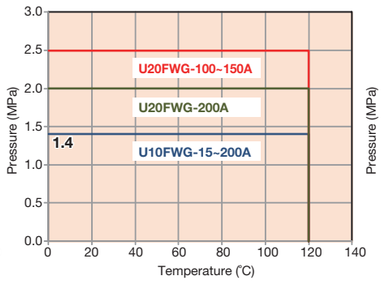
Pressure and Temperature Rating

■ Gland O-ring structure (for water)

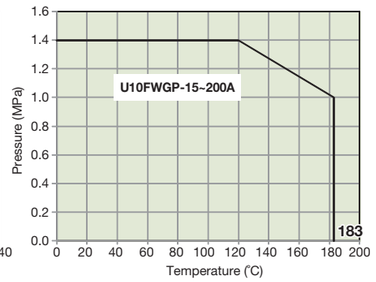


Standard specifications **(R-01)**

■ Gland packing structure (for chemicals)



Standard specifications **(R-02)**



High temperature specifications **(R-03)**

Seat Materials

In addition to seats with standard specifications and those with specifications for high temperatures, we also manufacture seats from the following special materials. Please consult our sales office if you have any questions.

Seat Materials	Color	Features
PTFE	Milky white	Used for seats with standard specifications Unfilled PTFE seats with superior chemical resistance and sealing performance
FT seat (Modified PTFE seat)	Milky white	Used for seats with specifications for high temperatures A modified PTFE seat featuring improved PTFE high-temperature creep resistance Same level of high sealing performance and chemical resistance as a PTFE seat
PTFE with glass fiber	White	Reinforced PTFE containing glass fiber Higher abrasion resistance than PTFE
PTFE with carbon fiber	Black	Reinforced PTFE containing carbon fiber Higher abrasion resistance than PTFE containing glass fiber Higher heat resistance than PTFE
P seat	Black	Carbon-reinforced material Higher abrasion resistance than PTFE Higher heat resistance than PTFE
Metal seat	Metallic color	Optimal for fluids that require higher abrasion resistance and higher seat-surface strength than resin seats To be used with a surface-hardened disc

Manual segment ball valves

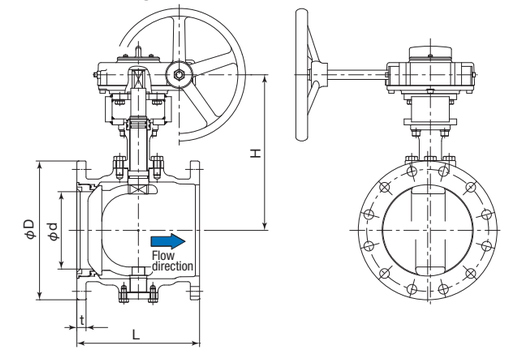
Features
- Lever handle (for valves with nominal diameter of up to 65A) and gear operator (for valves with nominal diameter of 80A or above) allow for smooth opening and closing operations.
- The valve can be kept half open, allowing for simplified fluid contro
- The main body material can be used to manufacture SCS14A as well.
- A wide range of options are available, including chain-operated gear operator and product with a limit switch.

Please place your order with our sales offic

Gland O-ring structure (Segment ball valve for water)

Product Code
U10FW/U20FW

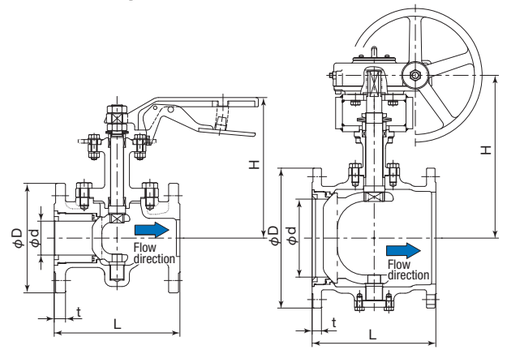
Structural drawing



Gland packing structure (Segment ball valve for chemicals)

Product Code
U10FWG/U20FWG

Structural drawing



Main dimensions

Nominal pressure		10K														20K			
Nominal diameter (A)		15	20	25	32	40	50	65	80	100	125	150	200	250	300	100	125	150	200
L (End-to-end dimensions)		108	117	127	140	165	178	190	203	229	254	267	292	330	356	229	254	267	292
D (Flange outer diameter)		95	100	125	135	140	155	175	185	210	250	280	330	400	445	225	270	305	350
t (Flange thickness)		12	14	14	16	16	16	18	18	18	20	22	22	24	24	24	26	28	30
d (Port diameter)		14.5	19	24	32	38	48	63	72	92	114	138	184	225	265	92	114	138	184
Gland O-ring structure (for water)	Connection	—	—	—	—	—	JIS B 2220 10K F.F.									JIS B 2220 20K R.F.			
	Pressure	—	—	—	—	—	Max: 1.4 MPa (Differential pressure Max: 1.4 MPa)									Max: 2.5 MPa (Differential pressure Max: 2.5 MPa)*1			
	Model	—	—	—	—	—	Gear operator									Gear operator			
	H: Total height	—	—	—	—	—	—	—	237	265	277	311	370	442	483	287	299	343	370
Gland packing structure (for chemicals)	Connection	JIS B 2220 10K R.F.												—	—	JIS B 2220 20K R.F.			
	Pressure	Max: 1.4 MPa (Differential pressure Max: 1.4 MPa)														Max: 2.5 MPa (Differential pressure Max: 2.5 MPa)*1			
	Model	Lever handle							Gear operator					—	—	Gear operator			
	H: Total height	153	156	170	174	193	199	217	237	265	277	316	384	—	—	292	304	357	384
Cv value (applies when the valve is fully open)		20	35	55	90	130	210	365	510	800	1200	1850	3200	4700	6700	800	1200	1850	3200

*1: Max: 2.0 MPa (Max. differential pressure: 2.0 MPa) with a nominal pressure of 20K-200A

Stainless Steel 10K/20K

"Hi TORK" Electric Motor-Operated segment ball valves

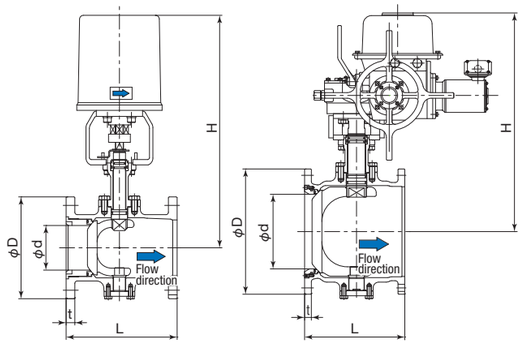
Features
- Compact design with a total height below that of the electric gate valves and knife gate valves.
- The actuator is a reliable "Hi TORK" electric Moter-operated valve, allowing you to combine it with various options.
- Allows for manual control in emergency situations.

Gland O-ring structure (Segment ball valve for water)

Product Code

BU1FW/BU2FW

Structural drawing

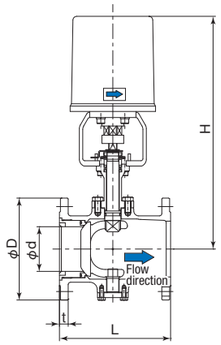


Gland packing structure (Segment ball valve for chemicals)

Product Code

BU1FWG/BU2FWG

Structural drawing



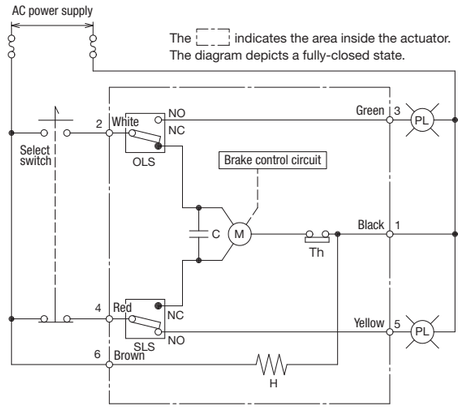
Main dimensions

Nominal pressure				10K													20K			
Nominal diameter (A)				15	20	25	32	40	50	65	80	100	125	150	200	250	300	100	125	150	200
L (End-to-end dimensions)				108	117	127	140	165	178	190	203	229	254	267	292	330	356	229	254	267	292
D (Flange outer diameter)				95	100	125	135	140	155	175	185	210	250	280	330	400	445	225	270	305	350
t (Flange thickness)				12	14	14	16	16	16	18	18	18	20	22	22	24	24	24	26	28	30
d (Port diameter)				14.5	19	24	32	38	48	63	72	92	114	138	184	225	265	92	114	138	184
Gland O-ring structure (for water)	Connection			—	—	—	—	—	JIS B 2220 10K F.F.									JIS B 2220 20K R.F.			
	Pressure specifications	Low differential pressure	Pressure	—	—	—	—	—	Max: 1.4 MPa (Differential pressure Max: 0.5 MPa)									—	—	—	—
			Model	—	—	—	—	—	M3B			M5B			M10B		M11B	*2	—	—	—	—
			H: Total height	—	—	—	—	—	381	391	417	483	495	624	663	697	777	—	—	—	—
		High differential pressure	Pressure	—	—	—	—	—	Max: 1.4 MPa (Differential pressure Max: 1.4 MPa)									Max:2.5 MPa (Differential pressure Max: 2.5 MPa)*3			
			Model	—	—	—	—	—	M3B			M5B			M10B		M11B	*1	*2	M10B		M11B	
			H: Total height	—	—	—	—	—	381	391	470	483	595	624	663	742	777	600	612	636	663
Gland packing structure (for chemicals)	Connection			JIS B 2220 10K R.F.												—	—	JIS B 2220 20K R.F.			
	Model			M3B							M5B			M10B		M11B	—	—	M10B		M11B	
	H: Total height			357	360	373	377	401	407	424	470	483	595	624	663	—	—	600	612	636	663
Cv value (applies when the valve is fully open)				20	35	55	90	130	210	365	510	800	1200	1850	3200	4700	6700	800	1200	1850	3200

*1: The operator for the 250A valves with specifications for high differential pressure is LTKD-01+BRM2F from Seibu Electric & Machinery Co., Ltd.
*2: The operator for the 300A valves is LTKD-01+BRM4F from Seibu Electric & Machinery Co., Ltd.
*3: Max: 2.0 MPa (Max. differential pressure: 2.0 MPa) with a nominal pressure of 20K-200A

Circuit diagram (standard Hi TORK)

M3B, M5B, M10B, M11B



M : Motor
C : Capacitor
OLS : Limit switch on the opening side
SLS : Limit switch on the closing side
H : Heater
Th : Thermal protector

Actuator specifications

Model of the operator			M3B	M5B	M10B	M11B	LTKD-01	
							BRM2F	BRM4F
Rated output torque (N·m)			49	177	559	1078	1862	3038
Opening and closing time (seconds)	50Hz		18	24	26	38	43	69
	60Hz		14	20	22	32	37	58
Current (A)	AC100/110V	Rated	0.37	0.61	1.6	2.2	Differs according to the voltage and frequency. Please contact us for details.	
		Peak	0.73	1.5	4.6	5.8		
	AC200/220V	Rated	0.19	0.31	0.85	1.15		
		Peak	0.37	0.75	2.4	2.8		
Power consumption (W)			27^{+5}	40^{+5}	145^{+10}	210^{+10}		
Rated output (W)			9	23	60	80	400	400
Time rating			30 minutes		15 minutes			
Safety protection			Thermal protector				Torque switch	
Usage environment (type of protection)			Indoor and outdoor (IP54 equivalent)				Indoor and outdoor (IP55)	
Frequency of opening and closing			One opening and closing or less/2 minutes				—	
Type of motor			Capacitor-run reversible motor				—	
Thermal class			E				B	
Space heater			Yes					
Opening/closing control signal			Yes (with voltage)				Yes (without voltage)	
Permissible ambient temperature			−10~50°C					
Ambient environment			0.5 G vibration, non-explosion-proof atmosphere					
Connection terminal			Compatible wire: $2mm^2$ or below (No need to use crimping terminal)				—	
Service entrance for electric wire			1-G½		1-G¾		2-G1,1-G¾	
Manual operation			Hook an adjustable wrench on the socket portion of the output shaft under the operator, and then open/close it by pushing down the adjustable wrench.		Insert a screw driver into the hole of the output shaft under the operator, push it down, and then hook an adjustable wrench on the manual operation shaft to open and close the valve.		Press down the lever to the position for manual operation, and then turn the handle.	

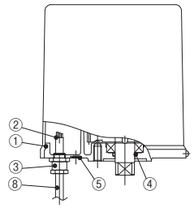
For details about other options, please see page 14.

Option Specifications for enduring flooding

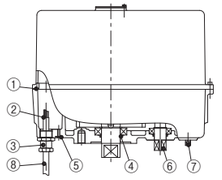
Features
- It can endure flooding for up to two months.
- The ventilator mounted on the lower part of the operator prevents the intrusion of water from the outside.
- The O-ring portion of the operator is coated with a special sealant.
  When the unit has been flooded, please make sure to remove the flooding water before operating the valve again.
- External connection is made via a lead cable. This prevents water from entering from the cable connection part.

Structural drawing

M3B·M5B



M10B·M11B



Commodity number	Product Name
1	Cover O-ring*
2	Cable end seal
3	Waterproof connector
4	Output shaft O-ring
5	Special ventilator
6	Manual operation shaft
7	Manual/automatic clutch
8	Cable (10m)

* M3B and M5B are coated with a special sealant.

Precautions

1. Install the valve in a way which ensures that the end of the lead cable (the wiring connection part) will remain dry and not be flooded.
2. Do not use the valve in a condition where it will remain flooded for two months or longer.
3. Do not remove the cover. The cover is coated with a sealant to make the valve totally waterproof.
4. The maximum allowable water depth during flooding is 1.5 meters from the top panel of the operator.
5. Do not operate the valve when it is flooded. Be sure to remove the flooding water before operating the valve again.

Stainless Steel 10K/20K

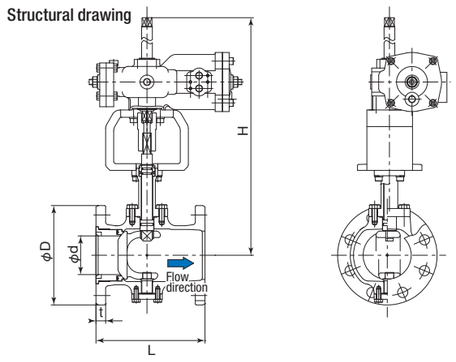
Cast-Metal Cylinder segment ball valves

Features
- The actuator is a reliable air cylinder from Kuwana Metals, Ltd. A wide variety of ancillary equipment pieces are available as options.
- The cylinder is made of casting and comes in a mechanically strong structure.
- Double-acting cylinders and single-acting cylinders (airless closure) are included in the lineup as standard equipment.

Gland O-ring structure (Segment ball valve for water)

CK(S)-BU1FW/BU2FW

Structural drawing

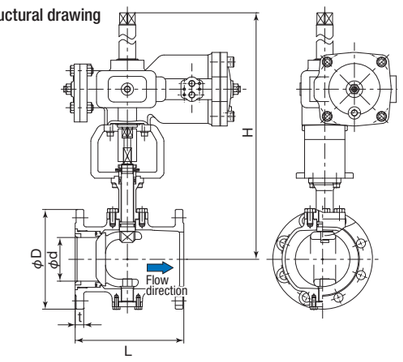


Gland packing structure (Segment ball valve for chemicals)

Product Code

CK(S)-BU1FWG/BU2FWG

Structural drawing



Main dimensions

Nominal pressure					10K													20K			
Nominal diameter (A)					15	20	25	32	40	50	65	80	100	125	150	200	250	300	100	125	150	200
L (End-to-end dimensions)					108	117	127	140	165	178	190	203	229	254	267	292	330	356	229	254	267	292
D (Flange outer diameter)					95	100	125	135	140	155	175	185	210	250	280	330	400	445	225	270	305	350
t (Flange thickness)					12	14	14	16	16	16	18	18	18	20	22	22	24	24	24	26	28	30
d (Port diameter)					14.5	19	24	32	38	48	63	72	92	114	138	184	225	265	92	114	138	184
Double-acting	Gland O-ring structure (for water)	Connection			—	—	—	—	—	JIS B 2220 10K F.F.									JIS B 2220 20K R.F.			
		Pressure specifications	Low differential pressure	Pressure	—	—	—	—	—	Max: 1.4 MPa (Differential pressure Max: 0.5 MPa)									—	—	—	—
				Model	—	—	—	—	—	H1C	H2C		H3C		H4		H5	*1	—	—	—	—
				H: Total height	—	—	—	—	—	389	425	477	543	555	580	619	762		—	—	—	—
			High differential pressure	Pressure	—	—	—	—	—	Max: 1.4 MPa (Differential pressure Max: 1.4 MPa)									Max: 2.5 MPa (Differential pressure Max: 2.5 MPa)*2			
				Model	—	—	—	—	—	H2C		H3C		H4			H5	*1	H4		H5	
				H: Total height	—	—	—	—	—	415	425	531	543	551	580	619	762		556	568	701	728
	Gland packing structure (for chemicals)	Connection			JIS B 2220 10K R.F.												—	—	JIS B 2220 20K R.F.			
		Model			H1C					H2C		H3C		H4			—	—	H4		H5	
		H: Total height			344	347	360	364	394	426	443	531	543	551	580	619	—	—				
Single-acting	Gland O-ring structure (for water)	Connection			—	—	—	—	—	JIS B 2220 10K F.F.									JIS B 2220 20K R.F.			
		Pressure specifications	Low differential pressure	Pressure	—	—	—	—	—	Max: 1.4 MPa (Differential pressure Max: 0.5 MPa)									—	—	—	—
				Model	—	—	—	—	—	H1SC	H2SC		H3SC		H4S		H5S	*1	—	—	—	—
				H: Total height	—	—	—	—	—	389	425	477	543	555	580	619	762		—	—	—	—
			High differential pressure	Pressure	—	—	—	—	—	Max: 1.4 MPa (Differential pressure Max: 1.4 MPa)									Max: 2.5 MPa (Differential pressure Max: 2.5 MPa)*2			
				Model	—	—	—	—	—	H2SC		H3SC		H4S			H5S	*1	H4S		H5S	
				H: Total height	—	—	—	—	—	415	425	531	543	551	580	728			556	568	701	728
	Gland packing structure (for chemicals)	Connection			JIS B 2220 10K R.F.												—	—	JIS B 2220 20K R.F.			
		Model			H1SC					H2SC		H3SC		H4S		H5S	—	—	H4S		H5S	
		H: Total height			344	347	360	364	420	426	443	531	543	551	580	728	—	—	556	568	701	728
Cv value (applies when the valve is fully open)					20	35	55	90	130	210	365	510	800	1200	1850	3200	4700	6700	800	1200	1850	3200

*1: Individual customization is available based on the pressure specifications.
*2: Max: 2.0 MPa (Max. differential pressure: 2.0 MPa) with a nominal pressure of 20K-200A

Specifications of the cylinder operator

■Casting cylinder

Specifications \ Model	H1C H1SC	H2C H2SC	H3C H3SC	H4 H4S	H5 H5S
Operating fluid	Compressed air*1				
Standard operating pressure	0.39 MPa				
Operating pressure range in which it may be used	0.39～0.69 MPa				
Cylinder pressure resistance	0.98 MPa				
Angle of rotation	90 degrees				
Air inlet	Rc1/4			Rc3/8	
Operating temperature range*2	-10℃～+60℃				
Place of use*3	Indoor/Outdoor				

*1: The supplied air must be free of frozen substances and condensation.
*2: If an accessory is mounted on the cylinder, the temperature range of the accessory must be observed.
*3: If an accessory is mounted on the cylinder, the specifications of the accessory must be observed.

Product Codes

■ Manual

Code① Valve material U: Stainless Steel
Code② Nominal pressure 10: JIS10K Flanged
20: JIS20K Flanged
Code③ Valve structure FW: Gland O-ring structure (for water)
FWG: Gland packing structure (for chemicals)
Code④ Temperature specifications Blank: Standard specifications
Specifications for high temperatures (excluding the gland O-ring structure)
Code⑤ Valve material Blank: SCS13A (Standard specifications)
M: SCS14A
Production size (A)

U □ FW □ □ - 100

■ Electric actuator

Code① Valve material BU: Stainless Steel ball valve
Code② Nominal pressure 1: JIS10K Flanged
2: JIS20K Flanged
Code③ Valve structure FW: Gland O-ring structure (for water)
FWG: Gland packing structure (for chemicals)
Code④ Differential pressure (applies only to 10K for water) Blank: Fluid with low differential pressure (Δ P=Max0.5 MPa)
H: Fluid with high differential pressure (Δ P=Max1.4 MPa)
Code⑤ Temperature specifications Blank: Standard specifications
P: Specifications for high temperatures (excluding the gland O-ring structure)
Code⑥ Valve material Blank: SCS13A (Standard specifications)
M: SCS14A
Code⑦ Power supply voltage 1: AC100V
2: AC200V
Production size (A)

BU □ FW □ □ □ □ - 100

■ Air cylinder

Code① Valve material CK: Casting double-acting cylinder
CKS: Casting single-acting cylinder (Airless: closure)
Code② Valve material BU: Stainless ball valve
Code③ Nominal pressure 1: JIS10K Flanged
2: JIS20K Flanged
Code④ Valve structure FW: Gland O-ring structure (for water)
FWG: Gland packing structure (for chemicals)
Code⑤ Differential pressure (applies only to 10K for water) Blank: Fluid with low differential pressure (Δ P=Max0.5 MPa)
H: Fluid with high differential pressure (Δ P=Max1.4 MPa)
Code⑥ Temperature specifications Blank: Standard specifications
P: Specifications for high temperatures (excluding the gland O-ring structure)
Code⑤ Valve material Blank: SCS13A (Standard specifications)
M: SCS14A
Production size (A)

CK - BU □ FW □ □ □ - 100

Options for Hi TORK

Classification	Specifications	Purpose	Role/Method/Supplementary information
Safety protection	Safety timer*1	Abnormality detection to prevent motor burnouts	If the valve does not fully open or close after the set opening and closing time has passed, it is detected as an abnormality within 60 seconds. The power is turned off and the abnormality signal is output at the same time.
	Torque switch	Abnormality detection to prevent motor burnouts	If there is an excessive torque load above the set value, the built-in switch stops operation. At the same time, the abnormality signal is output. This is effective for both opening and closing directions. The switch is reset automatically when the cause has been eliminated.
Remote aperture display	Potentiometer transmitter (135Ω or 500Ω)	Remoter aperture display	This is to be used with the potentiometer receiver. It makes it possible to check the valve aperture in a remote location.
	Potentiometer receiver	Remoter aperture display	This is to be used with the potentiometer transmitter to indicate the valve aperture continuously in the operating room and transmit 4 to 20mA signals.
	Auxiliary limit switch*2 (1C contact × 2)	Full-open/full-closure auxiliary switch	It allows for the addition of up to two full-open/full-closure non-voltage contacts.
		Half-open switch	It allows for the addition of up to two half-open non-voltage contacts.
Special control	Control relay	Simplifying the circuit	It allows for the easy opening and closing operations with an On/Off switch and enables parallel running.
Other	External terminal box	Streamlining the wiring	Wiring work can be done without opening "Hi TORK" cover. The wire outlet is 1-G¾.
	With lead wire		The standard length of the lead wire is 300mm. However, the user can specify the length of the cable.
	Service entrance for special wire	For special wire	Examples include 1-G¾ (M3B and M5B only).
	Flooding countermeasures	Countermeasures against short-term flooding	• Flooding period: Less than two months • Water depth: Up to 1.5m from the top of the operator • Standard cable length: 10m • The valve must not be operated when it is flooded.

*1: The timer is set at 60 seconds. It cannot be used for step control or the similar in which the opening and closing time exceeds 60 seconds.
*2: Controlling the motor with the auxiliary limit switch may result in valve seat leakage. Please consult us before you use it.
*Please consult us to learn more about detailed specifications.

Options for Air Cylinder

Item No.	Product Name		Manufacturer	Model
1	Limit switch	Outdoor explosion-proof type	Azbil	1LX-7001-R
			Azbil	VCX-7001-R
		Outdoor drip-proof type	Azbil	1LS1-J
			Azbil	VCL-5001
2	Electromagnetic valve	Explosion-proof type	Kaneko	MK15G-8-AE12PU-DMI-K
		Drip-proof type	Kaneko	MK15G-8-A12PG-TF-DMI-K
3	Filter regulator		CKD	B7019-2C-M-G
4	Speed controller		KONAN	BPSC-08A
			CKD	SC1-10
5	Silencer		CKD	SLW-8A-H
6	Equalizing valve (for double-acting cylinders only)		FUJILOK	FVCC-9202
			FESTO	GR-ZP-1/4-PT-NA-SA219041
7	Positioner		SSS	Electro-pneumatic XE152-SS3
			SSS	Pneumatic-pneumatic XP102-SS3

*The options are available separately. Please contact us for more information.

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