KITZ

KELMO® Electric Actuator Driven Compact Ball Valves

- ■KITZ Electric Actuators : EA, EC, EAE and ED Series
- ■100V / 200V AC · 50Hz / 60Hz, 12V / 24V DC
- ■Class 10K Bronze and Stainless Steel Threaded Ball Valves

KITZ CORPORATION

Contents

KELMO® Electric Actuators Driven Threaded Ball Valves

* Actuator rotation: B.D.=Bi-directional, U.D.=Uni-directional

** Bore design: F.B.=Full bore, S.B.=Standard bore, R.B.=Reduced bore

Type	KITZ Fig.	Actuator		Threaded Ball Valves						Page
		Rotation*	Function	Material	Port	Neck	Bore**	Ends connection	Size	
EAS AC/100V AC/200V	**EAS100 / 200-TNVE**	180°B.D.	(Basic)	Bronze	Vertical 3-way	Short	S.B.	Threaded	½" to 1¼"	21
	EAS100 / 200-UTVE			Stainless steel	Vertical 3-way	Short	R.B.	Threaded	¼" to 1"	
EASB AC/100V AC/200V	**EASB100 / 200-TNVE**		Terminal box	Bronze	Vertical 3-way	Short	S.B.	Threaded	½" to 1¼"	22
	EASB100 / 200-UTVE			Stainless steel	Vertical 3-way	Short	R.B.	Threaded	¼" to 1"	
EC AC/100V AC/200V	**EC100 / 200-TKE***1	90°U.D.	(Basic)	Brass	2-way	Short	R.B.	Threaded	¼" to 1"	25
	ECR100 / 200-TKE*1		Built-in relay	Brass	2-way	Short	R.B.	Threaded	¼" to 1"	
	ECS100 / 200-TKVE*1	180°U.D.	(Basic)	Brass	Vertical 3-way	Short	R.B.	Threaded	½" to 1"	
	ECSR100 / 200-TKVE*1		Built-in relay	Brass	Vertical 3-way	Short	R.B.	Threaded	½" to 1"	
EAE 100V AC 200V AC	**EAE100 / 200-TE***2	90°B.D.	Spring return	Bronze	2-way	Short	S.B.	Threaded	⅜" & ½"	27
	EAE100 / 200-TNE*2			Bronze	Horizontal 3-way	Short	S.B.	Threaded	¼" to ½"	
	EAE100 / 200-TUE			Bronze	2-way	Short	R.B.	Male & female threaded	½"	
	EAE100 / 200-UTE			Stainless steel	2-way	Short	R.B.	Threaded	¼" to ½"	
	EAE100 / 200-TKSE*2			Brass	2-way	Short	R.B.	Threaded	¼" to ¾"	
ED 12V DC 24V DC	**ED12 / 24-TE**	90°B.D.	DC (Basic version)	Bronze	2-way	Short	S.B.	Threaded	⅜" to 2"	28
	ED12 / 24-TNE			Bronze	Horizontal 3-way	Short	S.B.	Threaded	¼" to 2"	
	ED12 / 24-UTE			Stainless steel	2-way	Short	R.B.	Threaded	¼" to 2"	
	ED12 / 24-UTFE			Stainless steel	2-way	Short	F.B.	Threaded	½" to 1½"	
	ED12 / 24-UTGE			Stainless steel	2-way	Short	R.B.	Threaded	¼" to 1"	
	ED12 / 24-UTWE			Stainless steel	2-way	Short	F.B.	Wafer	⅜" to 1"	

*1 ¾" and 1" of TKE and TKVE for 5K service.
*2 ½" of TE, ½" of TNE and ¾" of TKSE are for 5K service.
*Actuator rotation: B.D.=Bi-directional, U.D.=Uni-directional
**Bore design: F.B.=Full bore, S.B.=Standard bore, R.B.=Reduced bore

This catalog uses **MPa**, a SI unit, for indication of pressures. For readers' convenience, however, **kgf/cm²** is also used as an additional information.

KITZ 10K Compact Ball Valves

Valve design features

- Convenient size range from ¼" through 2".
- Integral actuator mounting pads enabling easy mounting or dismantling of actuators for maintenance service.
- Tight contact between PTFE ball seats and high precision machined balls for leakage-free service.
- Dezincification resistant stems made of KITZ's special copper alloy K-Metal for long service life of valve operating mechanism.
- Choice of materials: Stainless steel for corrosion resistant service, or brass and bronze for general W.O.G. service.

Valve design specifications

Threaded ends:	JIS B 0203
Union ends:	JIS B 2301
Maximum service pressure:	0.98MPa (10kgf/cm²) TKE, TKVE & TKSE for ¾" and larger and 5UTWE: 0.48MPa (5kgf/cm²)
Seat P-T rating:	See Page 3
Test pressure:	Body: 2.06MPa (21kgf/cm²) Hydrostatic Seat: 0.59MPa (6kgf/cm²) Pneumatic

Ball valve design and applications

KITZ Fig.	JIS Material	Port	Bore*	Neck	End connection	Applications	Actuator
TE	BC6	2-way	S.B.	Short	Threaded	On-off control of water, oil, and gas.	EA EAB EAR EARB ED EAE**
TFE	C3771BE or BC6		F.B.				
TLE	BC6		S.B.	Long		Insulation for thermal isolation.	
TNE		Horizontal 3-way		Short		Instantaneous change of line fluid.	
TGE		2-way				Glanded high temperature service.	
TUE			R.B.		Male and female threaded with an union ring	Easy installation.	
TLUE				Long		TUE with insulation for thermal isolation.	
TKE	Chrome plating C3771BE			Short	Threaded	On-off control of water, oil and gas. M5 tapped for panel mounting.	EC ECR
TKVE		Vertical 3-way				Instantaneous change of line fluid. (No concern of fluid contamination.)	ECS ECSR
TKSE		2-way	R.B.			On-off control of water, oil and gas. M5 tapped for panel mounting.	EAE**
TNVE	BC6	Vertical 3-way	S.B.			Instantaneous change of line fluid. (No concern of fluid contamination.)	EAS EASB
UTE	SCS14A	2-way	R.B.			TE made of stainless steel.	EA EAB EAR EARB ED EAE**
UTFE			F.B.			TFE made of stainless steel.	
UTGE			R.B.			TGE made of stainless steel.	
UTWE	SCS13A		F.B.		Wafer	Full bore wafer design. Maintenance ease.	
UTVE	SCS14A	Vertical 3-way	R.B.		Threaded	Integrally molded body. Instantaneous change of fluid. (No concern of fluid contamination.)	EAS EASB

*Bore design: F.B.=Full bore, S.B.=Standard bore, R.B.=Reduced bore to API 608.
**EAE Series are available only for TE, TNE, TUE, TKSE and UTE ball valves.

Applications

Automated on-off or 3-way flow control in HAVC service handling water, oil, gas and air (by brass and bronze valves) or in light load industrial processes for pharmaceutical, fine chemical, petro-chemical, food, beverage, textile and other general industries.

Precautions

① No application to fluids including powders, muds or sands.

②
- Fluid of high viscosity, steam or vacuum
- Operational frequence higher than 10 times an hour
- Velocity of 3 m/sec or faster
- Service with concern of an extraordinary pressure raise of line fluid or a variation of fluid temperature higher than 60°C.
- For line voltage other than KITZ standard specification. Contact KITZ or its local distributors for technical advice on application to:

KITZ 10K Compact Ball Valves

Valve flow coefficient (Cv for fully opened valves)

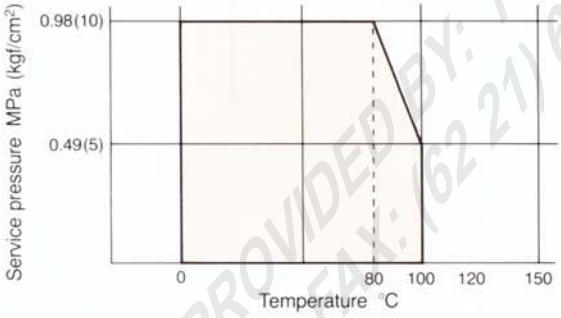
KITZ Fig. \ Size (inch)	¼	⅜	½	¾	1	1¼	1½	2
TE·TLE*	—	2.1	5.6	15	27	45	85	120
TNE	0.5	1	3	6	11	17	28	37
TGE	—	2.1	5.6	15	27	—	—	—
TUE·TLUE	—	—	3	6.2	—	—	—	—
TKE·TKSE*	0.9	2.4	3.4	6.1	11.5	—	—	—
TNVE	—	—	3	7.3	13	17	—	—
TKVE	—	—	2	3.6	6.5	—	—	—
UTE·UTGE*	1	2	5	10	15	20	37	60
TFE·UTFE	—	—	18	46	58	92	170	—
UTWE	—	6.5	18	46	58	—	—	—
UTVE	0.5	1	2.2	3.9	7	—	—	—

* ½" and larger for TLE. 1" and smaller for UTGE. ¾" and smaller for TKSE.

PTFE seat pressure-temperature ratings

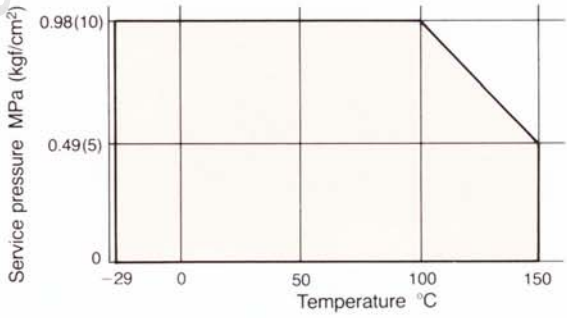
Valve: TE·TFE·TLE·TNE·TUE·TLUE·UTE·UTFE·UTWE

- Fluid: water, oil or gas (unfrozen)
- Ball seat: PTFE (standard)
- O-ring: FPM (standard)



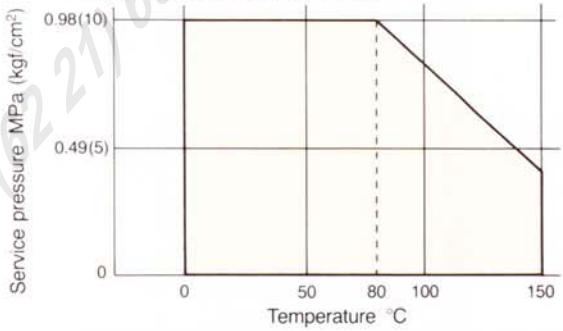
Valve: TGE

- Fluid: water, oil or gas (unfrozen)
- Ball seat: reinforced PTFE
- Gland packing: inconel wired asbestos



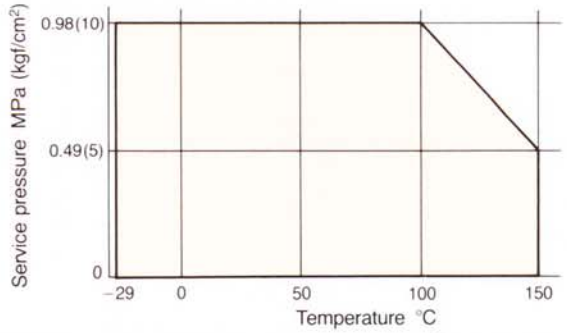
Valve: TE·TFE·TLE·TNE·TUE·TLUE·UTE·UTFE·UTWE

- Fluid: water, oil, gas (unfrozen) or saturated steam
- Ball seat: reinforced PTFE (option*)
- O-ring: Special FPM (option*)



Valve: UTGE

- Fluid: water, oil, gas (unfrozen) or saturated steam
- Ball seat: reinforced PTFE
- Gland packing: inconel wired asbestos



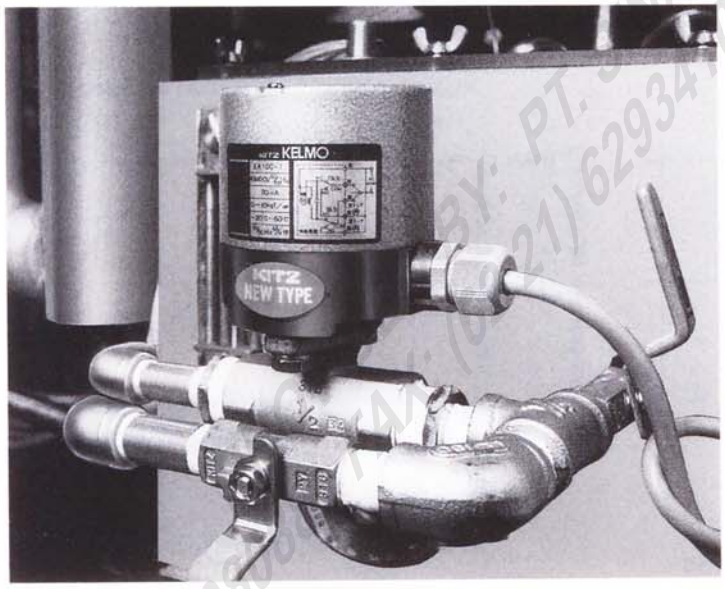
* Specify these materials in your orders so that valves can perform the pressure-temperature ratings mentioned here, except 1½" and 2" for which only standard materials are available.

Note: • Refer to Page 23 for PTFE pressure-temperature ratings of TKE, TKVE and TKSE.
• Ambient temperature depends on the design of actuators. Refer to the information given for each of actuators introduced in this catalog.

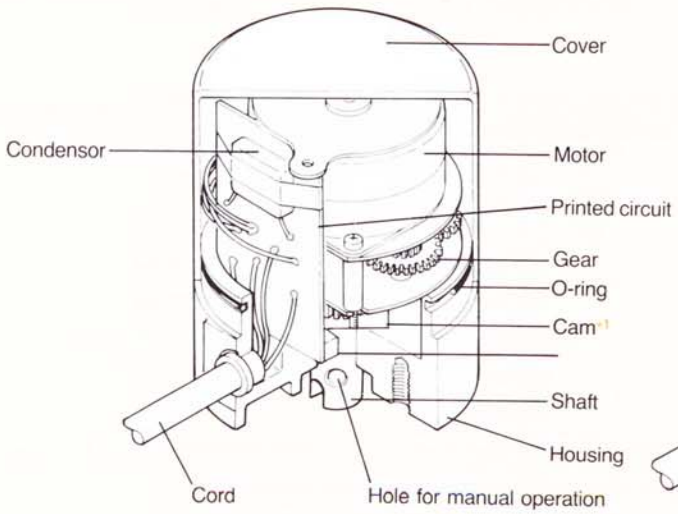
KITZ KELMO® Electric Actuators: EA, EC and ED Series

General design features

- Compact size and light weight with diecast aluminium housing and powerful miniature motor for economy and handling ease.
- Simple mechanism with minimized number of component parts for high durability and trouble-free service.
- Free from concerns common with conventional solenoid valves such as water hammer, pressure loss, malfunction caused by jammed valve interior, and restricted flow direction.
- All weather type design for outdoor service.
- Availability of manual operation in case of electric failure.
- Versatile applications by means of optional built-in relay circuit for parallel drive, terminal boxes and 180° rotary mechanism for 3-way flow direction.
- Safety provision to protect the motor from overheat damage caused by accidental overload.
- Factory-made actuator-to-valve assembly for off-the-shelf supply.

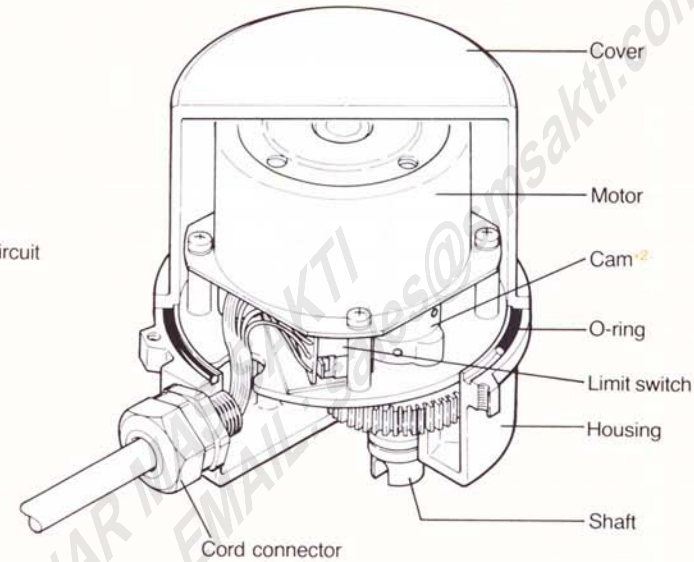


KITZ KELMO® Electric Actuators



Type EA100 / 200 Size 1 & 1.5

*1 Different cam design for Type EAS100 / 200-1



Type EA100 / 200 Size 2

*2 Different cam design for Type EAS100 / 200-2

Compact KELMO® actuators: power sources and functional features

Type of actuator		Power source	Functional features
EA Series	EA100 / EA200	100V AC 200V AC (50Hz / 60Hz)	90° bi-directional rotation
	EAB100 / EAB200		90° bi-directional rotation / Terminal box
	EAR100 / EAR200		90° bi-directional rotation / Built-in relay
	EARB100 / EARB200		90° bi-directional rotation / Built-in relay / Terminal box
	EAS100 / EAS200		180° bi-directional rotation
	EASB100 / EASB200		180° bi-directional rotation / Terminal box
EC Series	EC100 / EC200	100V AC 200V AC (50Hz / 60Hz)	90° Uni-directional rotation
	ECR100 / ECR200		90° Uni-directional rotation / Built-in relay
	ECS100 / ECS200		180° Uni-directional rotation
	ECSR100 / ECSR200		180° Uni-directional rotation / Built-in relay
EAE Series	EAE100 / EAE200	100V / 200V AC (50Hz / 60Hz)	90° bi-directional rotation / Spring-return
ED Series	ED12 / ED24	12V / 24V DC	90° bi-directional rotation / Parallel drive

Type EA Electric Actuators / Class 10K Bronze or Stainless Steel Ball Valves

100V / 200V AC 50Hz / 60Hz

■ ***90° bi-directional rotation***

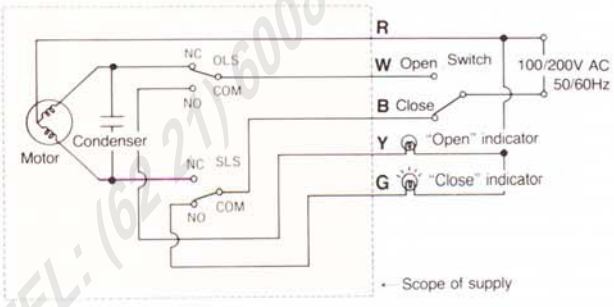
Type EA actuator design specifications

Specification \ Type		EA100-1	EA200-1	EA100-1.5	EA200-1.5	EA100-2	EA200-2
Power source 50Hz / 60Hz		100V AC	200V AC	100V AC	200V AC	100V AC	200V AC
Rated current		90mA	50mA	90mA	50mA	100mA	50mA
Max. power consumption		9W	10W	9W	10W	10W	
Valve closing time 90°	50Hz	6 sec.		12 sec.		15 sec.	
	60Hz	5 sec.		10 sec.		13 sec.	
Max. output torque		1.9N·m (20kgf.cm)		3.9N·m (40kgf·cm)		9.8N·m (100kgf·cm)	
Rated time		Continuous					
Insulation Class		JIS Class E					
Sensitive switch contact capacity		100V AC 3A (Resistan load) · 200V AC 1A (Resistan load)				100V AC 3A (Resistan load) · 250V AC 3A (Resistanload)	
Position limit switch		1 pce each for opening / closing (Using the source voltage)					
Insulation strength		1500V AC (1 min. interval)					
Insulation resistant		Minimum 10MΩ (500V DC)					
Standard protection		All weather type (for outdoor use)					
Ambient temperature		−20°C to +50°C					
Mounting position		Vertical to horizontal					
Wiring		Vinyl cabtyre cord with 5 cores					
		0.3mm² (700mm long)				0.5mm² (700mm long)	
Lubrication		Grease					
Overload protection		Impedance protection					
Coating color		Housing: black Cover: light blue					

Note: Contact to KITZ for technical advice when the service conditions are different.

Type EA actuator circuit diagrams (with the valve fully closed)

EA100 / 200 Size 1~2



- Wire color: R red W white B black Y yellow G green
- Actuator rotates:
  R-W: counter-clockwise to fully open the valve
  R-B : clockwise to fully close the valve
- Limit switches activate:
  OLS: on fully opening the valve (R-W: off W-Y: on)
  SLS: on fully closing the valve (R-B: off B-G: on)

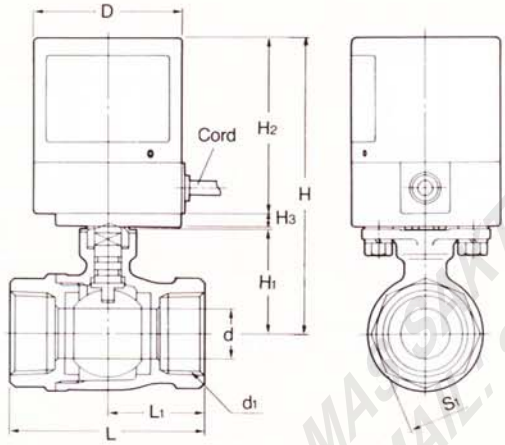
Note: For all sizes of Type EAB 100 / 200, the terminals are numbered 1, 2, 3, 4 and 5 in place of R, W, B, Y and G respectively.

Note:
- When two or more actuators are driven by a single switch, ensure to prevent unintended current flows by using relay contacts.
- Micro electric load caused by auxiliary devices such as lamps or relays may cause failure to the contacts of limit switches. Ask KITZ Corporation for advice when you have a concern of this kind.

Type EA Electric Actuators / Class 10K Bronze Ball Valves

Fig. EA100 / 200-TE

Actuator size: 1 and 1.5
Valve size: ⅜" to 1" (Standard bore)



Valve material

Parts	JIS materials
Body	BC6
Body cap	C3771BE
Stem	K-Metal*1,*2
Ball	K-Metal*1 + Ni-Cr plating
Ball seat	PTFE
O-ring	FPM

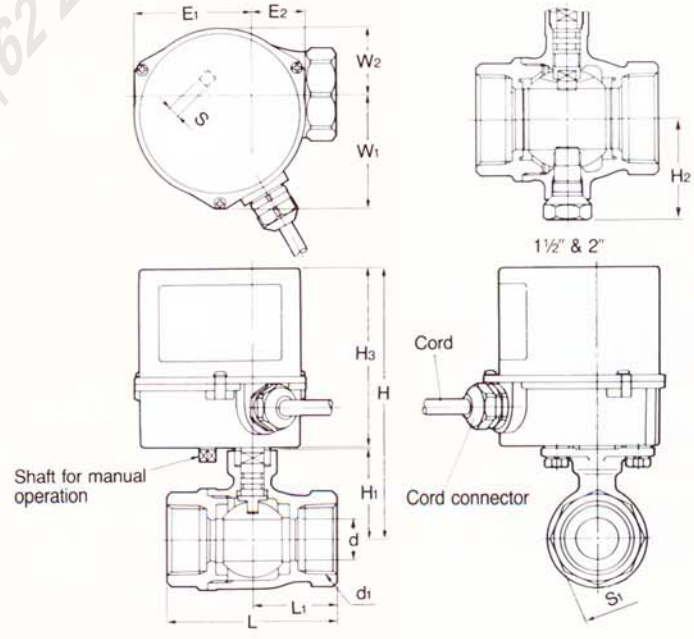
*1 K-Metal is a special brass developed for anti-dezincification.
*2 Cr plating (1½" & 2")

Dimensions (mm)

Valve size (inch)	d	d1	H	H1	L	L1	S1	Actuator H2	Actuator H3	Actuator D	Actuator Type
⅜	7.5	Rc⅜	104	28	46	22	22	70	5	60	EA100 / 200-1
½	10	Rc½	109.5	33.5	65	32.5	28				
¾	15	Rc¾	113.5	37.5	68	34	34				EA100 / 200-1.5
1	20	Rc1	117.5	41.5	79	39.5	41				

Fig. EA100 / 200-TE

Actuator size: 2
Valve size: 1¼" to 2" (Standard bore)



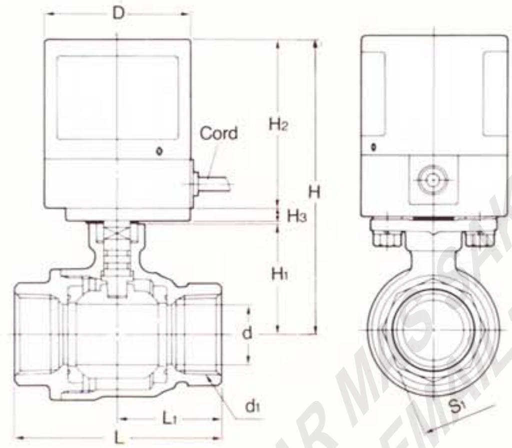
Dimensions (mm)

Valve size (inch)	d	d1	H	H1	H2	L	L1	S1	Actuator H3	E1	E2	W1	W2	S	Actuator Type
1¼	25	Rc1¼	128.5	45.5	—	86	43	50	82	54.5	25	53	31.5	5.5	EA100 / 200-2
1½	32	Rc1½	142.5	59.5	53.5	96	48	56							
2	40	Rc2	148.5	65.5	60	109	54.5	68							

Type EA Electric Actuators / Class 10K Bronze or Brass Ball Valves

Fig. EA100 / 200-TFE

Actuator size: 1.5
Valve size: ½" and ¾" (Full bore)



Valve material

Parts	JIS materials
Body	C3771BE (½"~1") BC6 (1¼" & 1½")
Body cap	C3771BE
Stem	K-Metal*1,*2
Ball	K-Metal*1+Ni-Cr plating
Ball seat	PTFE
O-ring	FPM

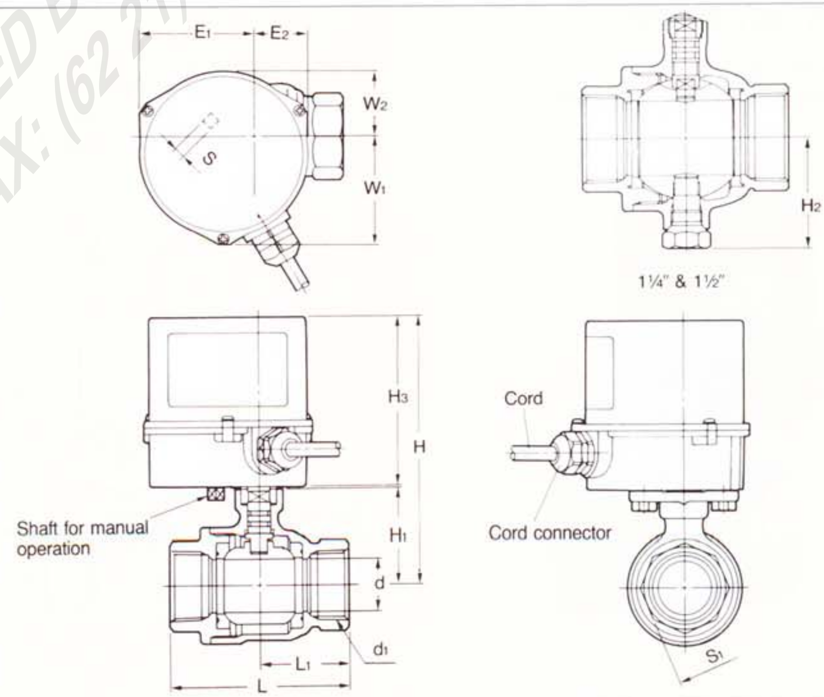
*1 K-Metal is a special brass developed for anti-dezincification.
*2 Cr plating (1¼" & 1½")

Dimensions (mm)

Valve size (inch)	d	d1	H	H1	L	L1	S1	Actuator H2	Actuator H3	Actuator D	Actuator Type
½	15	Rc½	113.5	37.5	63	31.5	26	70	5	60	EA100 / 200-1.5
¾	20	Rc¾	117.5	41.5	73	36.5	32				

Fig. EA100 / 200-TFE

Actuator size: 2
Valve size: 1" to 1½" (Full bore)



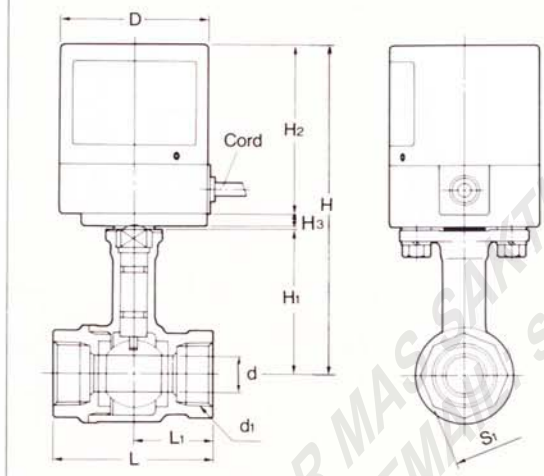
Dimensions (mm)

Valve size (inch)	d	d1	H	H1	H2	L	L1	S1	Actuator H3	Actuator E1	Actuator E2	Actuator W1	Actuator W2	Actuator S	Actuator Type
1	25	Rc1	128.5	45.5	—	85	42.5	39	82	54.5	25	53	31.5	5.5	EA100 / 200-2
1¼	32	Rc1¼	142.5	59.2	53.5	98	49	50							
1½	40	Rc1½	148.5	65.5	59.5	108	54	56							

Type EA Electric Actuators / Class 10K Long Neck Bronze Ball Valves

Fig. EA100 / 200-TLE

Actuator size: 1 and 1.5
Valve size: ½" to 1" (Standard bore)



Valve material

Parts	JIS materials
Body	BC6
Body cap	BC6
Stem	K-Metal* + Cr plating
Ball	K-Metal* + Ni-Cr plating
Ball seat	PTFE
O-ring	FPM

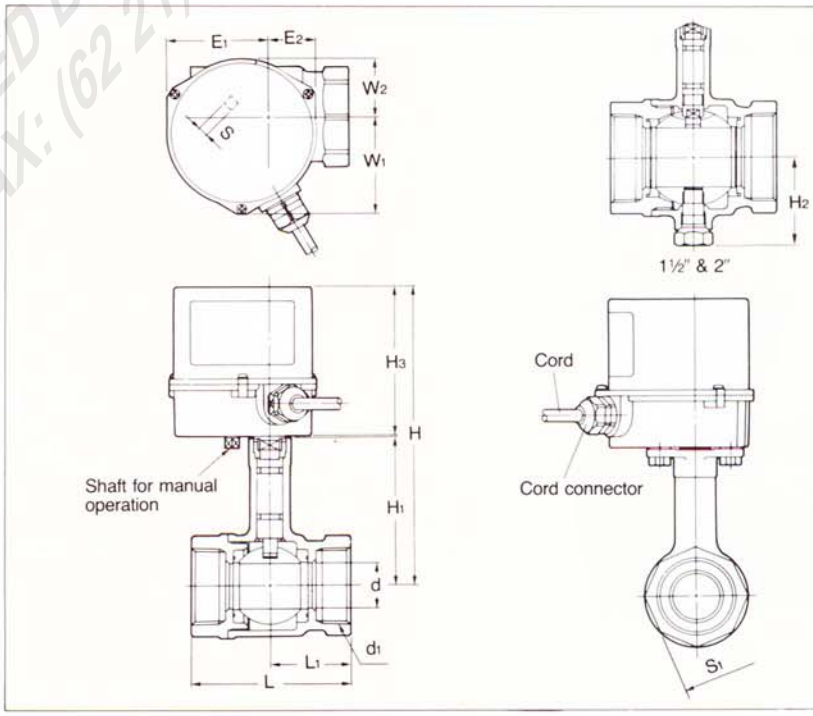
* K-Metal is a special brass developed for anti-dezincification.

Dimensions (mm)

Valve size (inch)	d	d1	H	H1	L	L1	S1	Actuator			
								H2	H3	D	Type
½	10	Rc½	132	56	56	28	27	70	5	60	EA100 / 200-1
¾	15	Rc¾	136.5	60.5	65	32.5	33				EA100 / 200-1.5
1	20	Rc1	140	64	78	39	41				

Fig. EA100 / 200-TLE

Actuator size: 2
Valve size: 1¼" to 2" (Standard bore)



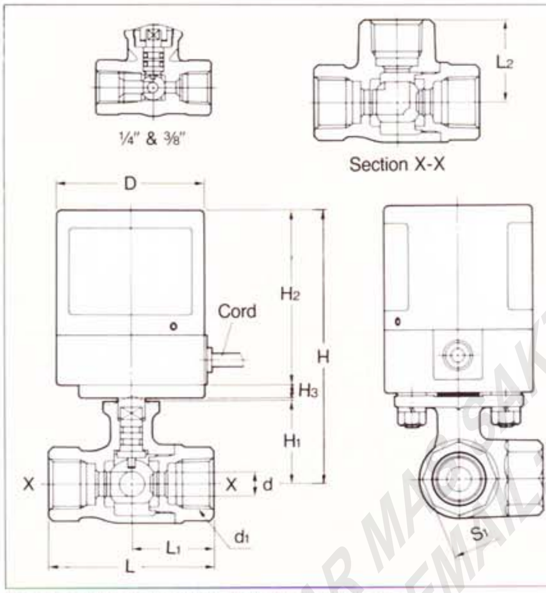
Dimensions (mm)

Valve size (inch)	d	d1	H	H1	H2	L	L1	S1	Actuator						
									H3	E1	E2	W1	W2	S	Type
1¼	25	Rc1¼	163	80	—	86	43	51	82	54.5	25	53	31.5	5.5	EA100 / 200-2
1½	32	Rc1½	166	83	53.5	96	48	58							
2	40	Rc2	173	90	60	109	54.5	71							

Type EA Electric Actuators / Class 10K Horizontal 3-way Bronze Ball Valves

Fig. EA100 / 200-TNE

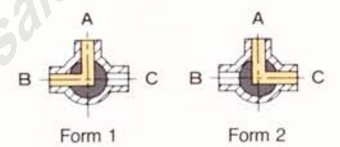
Actuator size: 1 and 1.5
Valve size: ¼" to 1" (Standard bore)



Valve material

Parts	JIS materials
Body	BC6
Body cap (½"~2)	C3771BE
Stem	K-Metal*
Ball	K-Metal*+Ni-Cr plating
Ball seat	PTFE
Insert (¼"&⅜")	C3771BE
O-ring	FPM

* K-Metal is a special brass developed for anti-dezincification.



Note: Refer to Page 22 for flow directional forms.
Products are adequately identified with nameplates indicating either one of Form 1 or Form 2.

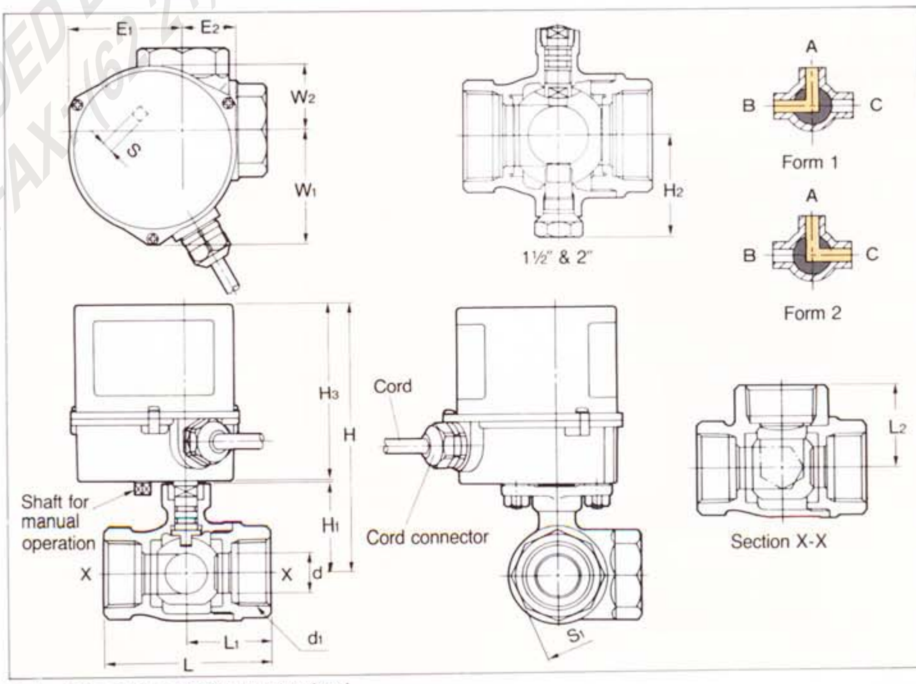
Dimensions

(mm)

Valve size (inch)	d	d1	H	H1	L	L1	L2	S1	Actuator H2	Actuator H3	Actuator D	Actuator Type
¼	4.5	Rc¼	101.5	25.5	46	23	23	21	70	5	60	EA100 / 200-1
⅜	6.8	Rc⅜	101.5	25.5	46	23	23	21				
½	10	Rc½	109.5	33.5	67	33.5	33.5	28				
¾	15	Rc¾	114	38	68	34	34	34				EA100 / 200-1.5
1	20	Rc1	118	42	79	39.5	39.5	41				

Fig. EA100 / 200-TNE

Actuator size: 2
Valve size: 1¼" to 2" (Standard bore)



Note: Refer to Page 22 for flow directional.
Products are adequately identified with nameplates indicating either one of Form 1 or Form 2.

Dimensions

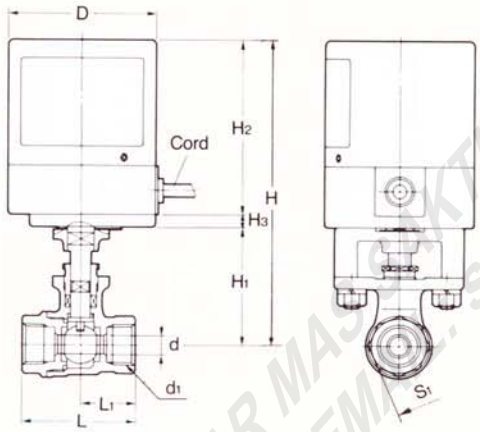
(mm)

Valve size (inch)	d	d1	H	H1	H2	L	L1	L2	S1	Actuator H3	Actuator E1	Actuator E2	Actuator W1	Actuator W2	Actuator S	Actuator Type
1¼	25	Rc1¼	129.5	46.5	—	89	44.5	44.5	50	82	54.5	25	53	31.5	5.5	EA100 / 200-2
1½	32	Rc1½	142.5	59.5	53.5	100	50	50	56							
2	40	Rc2	148.5	65.5	60	115	57.5	57.5	68							

Type EA Electric Actuators / Class 10K Glanded Bronze Ball Valves

Fig. EA100 / 200-TGE

Actuator size: 1.5
Valve size: 3/8" (Standard bore)



Valve material

Parts	JIS materials
Body	BC6
Body cap	C3771BE
Stem	K-Metal*
Ball	K-Metal* + Ni-Cr plating
Ball seat	Reinforced PTFE
Gland packing	Inconel wire asbestos

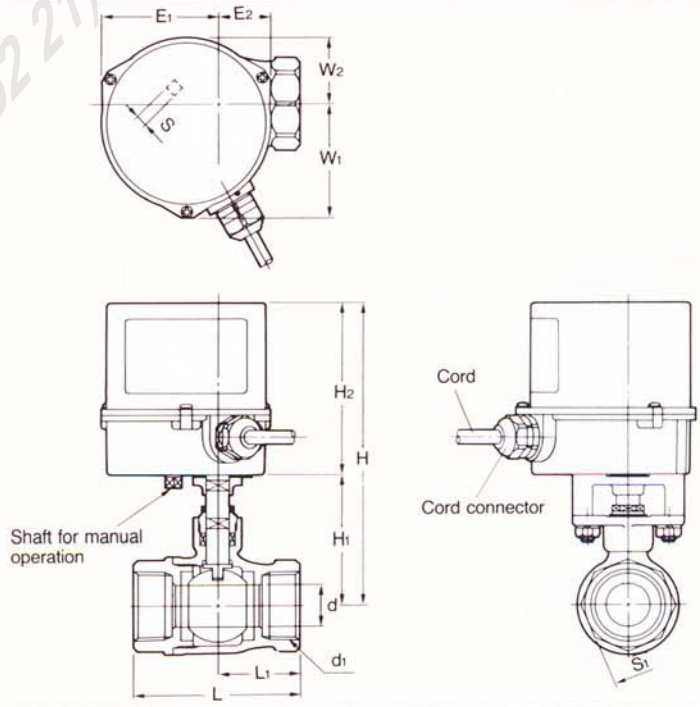
* K-Metal is a special brass developed for anti-dezincification.

Dimensions (mm)

Valve size (inch)	d	d1	H	H1	L	L1	S1	Actuator			
								H2	H3	D	Type
3/8	7.5	Rc3/8	123	48	46	22	22	70	5	60	EA100 / 200-1.5

Fig. EA100 / 200-TGE

Actuator size: 2
Valve size: 1/2" to 1" (Standard bore)



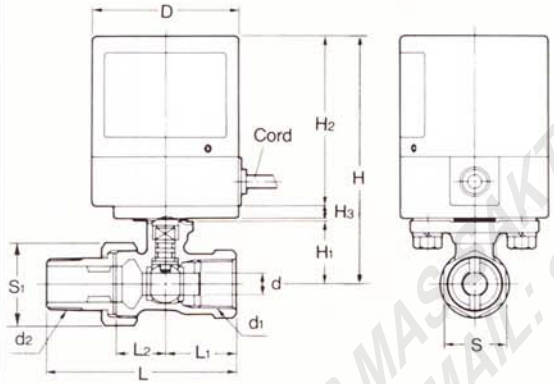
Dimensions (mm)

Valve size (inch)	d	d1	H	H1	L	L1	S1	Actuator						
								H2	E1	E2	W1	W2	S	Type
1/2	10	Rc1/2	135.5	53.5	65	32.5	28	82	54.5	25	53	31.5	5.5	EA100 / 200-2
3/4	15	Rc3/4	139.5	57.5	68	34	34							
1	20	Rc1	143.5	61.5	79	39.5	41							

Type EA Electric Actuators / Class 10K Union Ring Bronze Ball Valves

Fig. **EA100 / 200-TUE**

Actuator size: 1
Valve size: ½" and ¾" (Reduced bore)



Valve material

Parts	JIS materials
Body	BC6
Stem	K-Metal*
Ball	K-Metal* + Ni-Cr plating
Ball seat	PTFE
Insert	C3771BE
O-ring	FPM
Gasket	Reinforced PTFE
Union nipple	C3771BE

* K-Metal is a special brass developed for anti-dezincification.

Dimensions

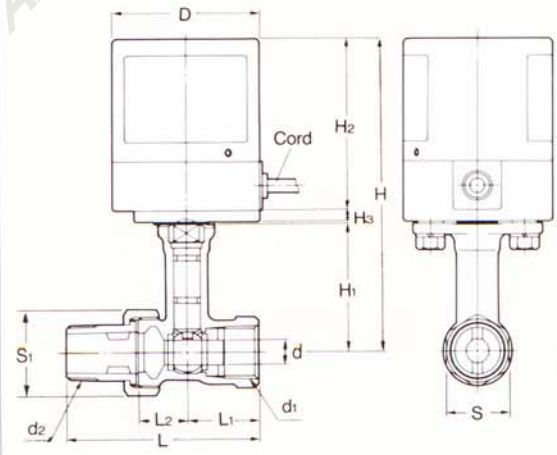
(mm)

Valve size (inch)	d	d1	d2	H	H1	L	L1	L2	S	S1	Actuator			
											H2	H3	D	Type
½	8	Rc½	R½	102	26	78.5	29	20	25	31	70	5	60	EA100 / 200-1
¾	11	Rc¾	R¾	104.5	28.5	81	29	20	32	36				

Type EA Electric Actuators / Class 10K Long Neck Union Ring Bronze Ball Valves

Fig. **EA100 / 200-TLUE**

Actuator size: 1
Valve size: ½" and ¾" (Reduced bore)



Valve material

Parts	JIS materials
Body	BC6
Stem	K-Metal* + Cr plating
Ball	K-Metal* + Ni-Cr plating
Ball seat	PTFE
Insert	C3771BE
O-ring	FPM
Gasket	Reinforced PTFE
Union nipple	C3771BE

* K-Metal is a special brass developed for anti-dezincification.

Dimensions

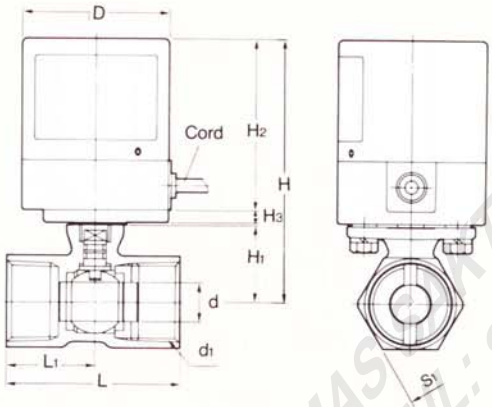
(mm)

Valve size (inch)	d	d1	d2	H	H1	L	L1	L2	S	S1	Actuator			
											H2	H3	D	Type
½	8	Rc½	R½	128.5	52.5	78.5	29	20	25	31	70	5	60	EA100 / 200-1
¾	11	Rc¾	R¾	131	55	81	29	20	32	36				

Type EA Electric Actuators / Class 10K Stainless Steel Ball Valves

Fig. EA100 / 200-UTE

Actuator size: 1 and 1.5
Valve size: ¼" to 1" (Reduced bore)



Valve material

Parts	JIS materials
Body	SCS14A
Stem	SUS316+Cr plating
Ball	SUS316
Ball seat	PTFE
Insert	SUS316
O-ring	FPM

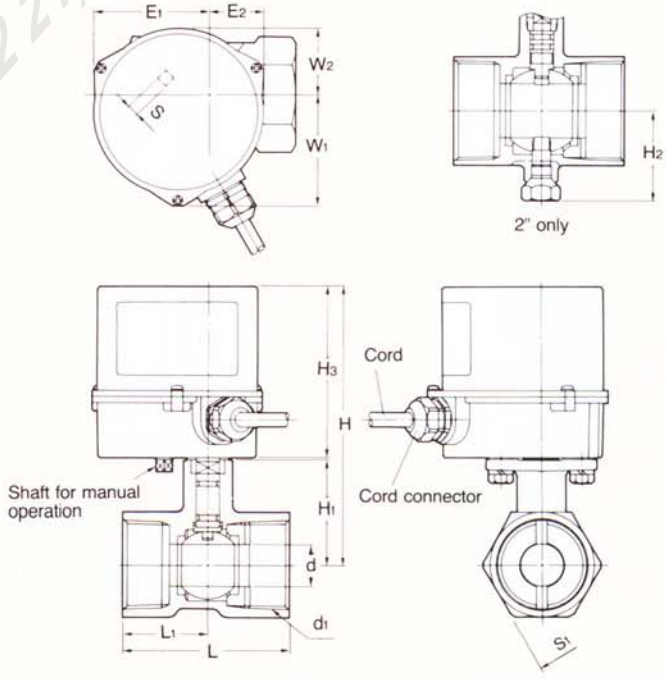
Dimensions

(mm)

Valve size (inch)	d	d1	H	H1	L	L1	S1	Actuator H2	Actuator H3	Actuator D	Actuator Type
¼	5.3	Rc¼	102	26	44	21	21	70	5	60	EA100 / 200-1
⅜	7.7	Rc⅜	102	26	44	21	21				
½	9.2	Rc½	102	26	56.5	27.5	25				
¾	12.5	Rc¾	105	29	59	30	32				
1	16	Rc1	108	32	71	36	38				EA100 / 200-1.5

Fig. EA100 / 200-UTE

Actuator size: 2
Valve size: 1¼" to 2" (Reduced bore)



Dimensions

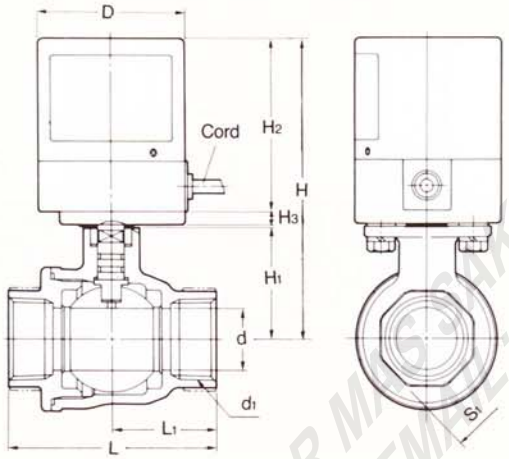
(mm)

Valve size (inch)	d	d1	H	H1	H2	L	L1	S1	Actuator H3	Actuator E1	Actuator E2	Actuator W1	Actuator W2	Actuator S	Actuator Type
1¼	20	Rc1¼	132.5	49.5	—	78	40	49	82	54.5	25	53	31.5	5.5	EA100 / 200-2
1½	24.5	Rc1½	135.5	52.5	—	83	42.5	53							
2	32	Rc2	141.5	58.5	53.5	100	51	65							

Type EA Electric Actuators / Class 10K Stainless Steel Ball Valves

Fig. EA100 / 200-UTFE

Actuator size: 1.5
Valve size: ½" and ¾" (Full bore)



Valve material

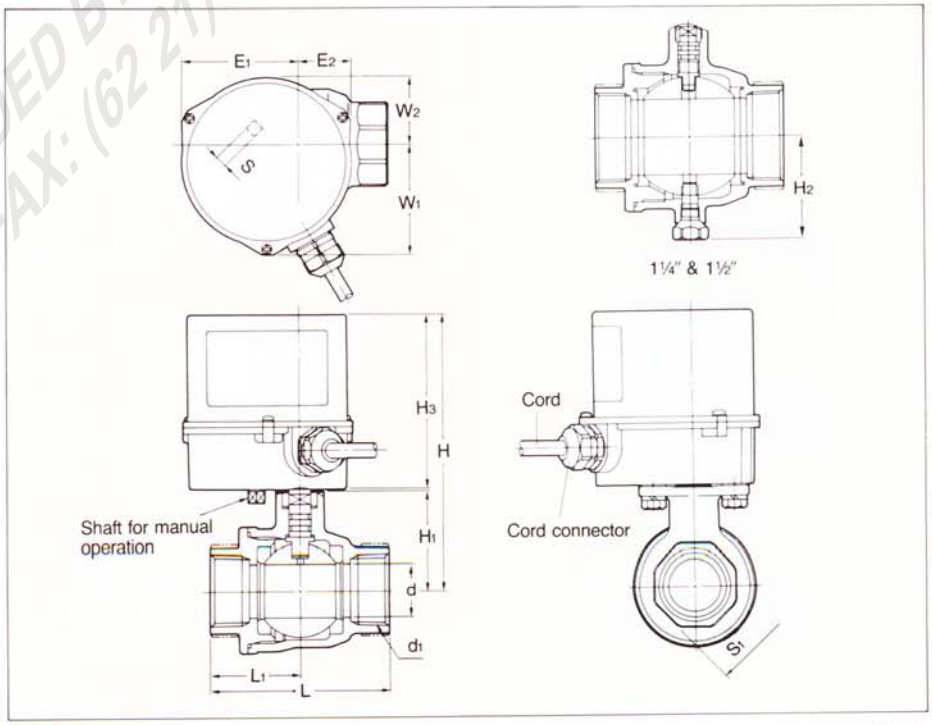
Parts	JIS materials
Body	SCS14A
Body cap	SCS14A
Stem	SUS316+Cr plating
Ball	SUS316
Ball seat	PTFE
O-ring	FPM
Gasket	PTFE

Dimensions (mm)

Valve size (inch)	d	d1	H	H1	L	L1	S1	Actuator H2	Actuator H3	Actuator D	Actuator Type
½	15	Rc½	113.5	37.5	62	31	26	70	5	60	EA100 / 200-1.5
¾	20	Rc¾	117.5	41.5	73	36.5	32				

Fig. EA100 / 200-UTFE

Actuator size: 2
Valve size: 1" to 1½" (Full bore)



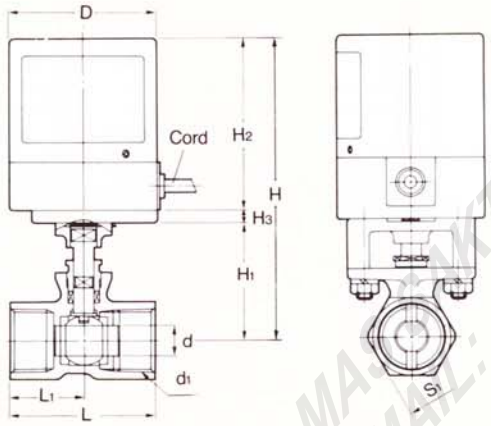
Dimensions (mm)

Valve size (inch)	d	d1	H	H1	H2	L	L1	S1	Actuator H3	Actuator E1	Actuator E2	Actuator W1	Actuator W2	Actuator S	Actuator Type
1	25	Rc1	128.5	45.5	—	85	42.5	39	82	54.5	25	53	31.5	5.5	EA100 / 200-2
1¼	32	Rc1¼	143.5	60.5	55	98	49	48							
1½	40	Rc1½	149.5	66.5	61	108	54	54							

Type EA Electric Actuators / Class 10K Glanded Stainless Steel Ball Valves

Fig. EA100 / 200-UTGE

Actuator size: 1.5
Valve size: ¼" to ½" (Reduced bore)



Valve material

Parts	JIS materials
Body	SCS14A
Stem	SUS316 + Cr plating
Ball	SUS316
Ball seat	Reinforced PTFE
Insert	SUS316
Gland packing	Inconel wire asbestos

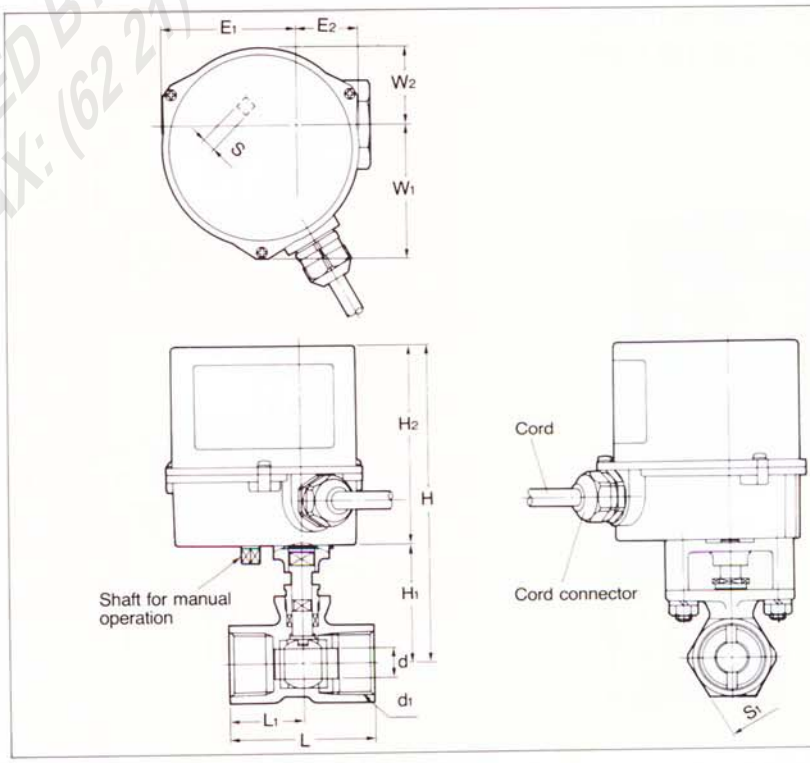
Dimensions

(mm)

Valve size (inch)	d	d1	H	H1	L	L1	S1	Actuator			
								H2	H3	D	Type
¼	5.3	Rc¼	121	46	44	21	21	70	5	60	EA100 / 200-1.5
⅜	7.7	Rc⅜	121	46	44	21	21				
½	9.2	Rc½	121	46	56.5	27.5	25				

Fig. EA100 / 200-UTGE

Actuator size: 2
Valve size: ¾" and 1" (Reduced bore)



Dimensions

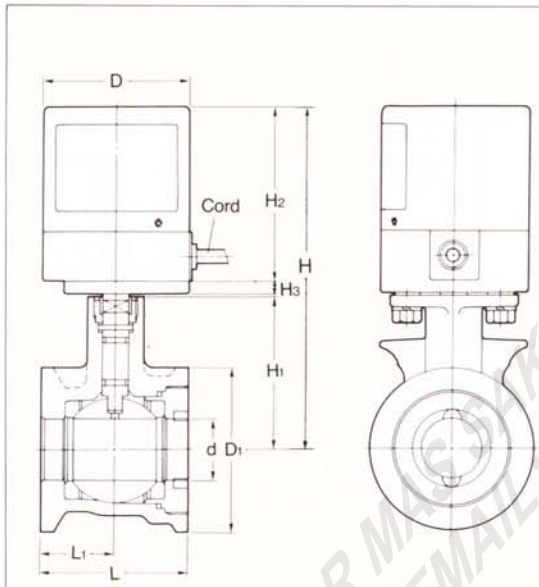
(mm)

Valve size (inch)	d	d1	H	H1	L	L1	S1	Actuator						
								H2	E1	E2	W1	W2	S	Type
¾	12.5	Rc¾	131	49	59	30	32	82	54.5	25	53	31.5	5.5	EA100 / 200-2
1	16	Rc1	134	52	71	36	38							

Type EA Electric Actuators / Class 5K / 10K Wafer Stainless Steel Ball Valves

Fig. EA100 / 200-5UTWE
EA100 / 200-10UTWE

Actuator size: 1 and 1.5
Valve size: ⅜" to ¾" (Full bore)



Valve material

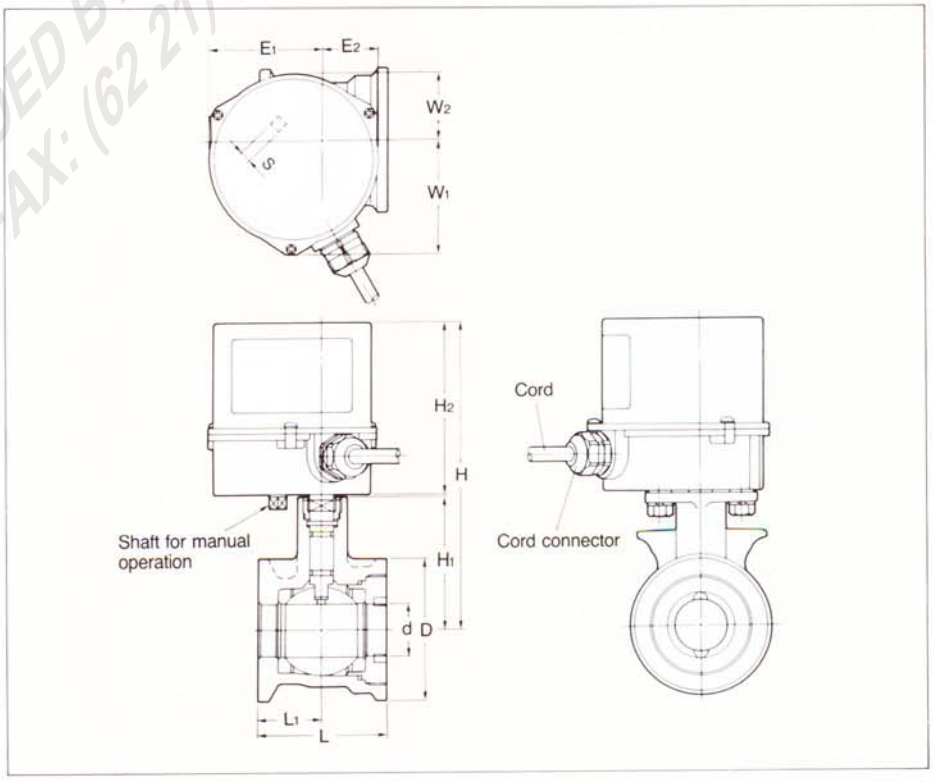
Parts	JIS materials
Body	SCS13A
Stem	SUS304 + Cr plating
Ball	SUS304
Ball seat	PTFE
Insert	SUS304
O-ring	FPM

Dimensions (mm)

Valve size (inch)	d	H	H1	L	L1	D1		Actuator			
						5K	10K	H2	H3	D	Type
⅜	10	131	55	35	17.5	43	48	70	5	60	EA100 / 200-1
½	15	134	58	40	20	48	53				EA100 / 200-1.5
¾	20	136	60	50	25	53	58				

Fig. EA100 / 200-5UTWE
EA100 / 200-10UTWE

Actuator size: 2
Valve size: 1" (Full bore)



Dimensions (mm)

Valve size (inch)	d	H	H1	L	L1	D		Actuator						
						5K	10K	H2	E1	E2	W1	W2	S	Type
1	25	151	68	60	30	63	69	82	54.5	25	53	31.5	5.5	EA100 / 200-2

Type EAB Electric Actuators / Class 10K Bronze or Stainless Steel Ball Valves

100V / 200V AC 50Hz / 60Hz

■ ***Factory assembled terminal box for easier installation of actuators***

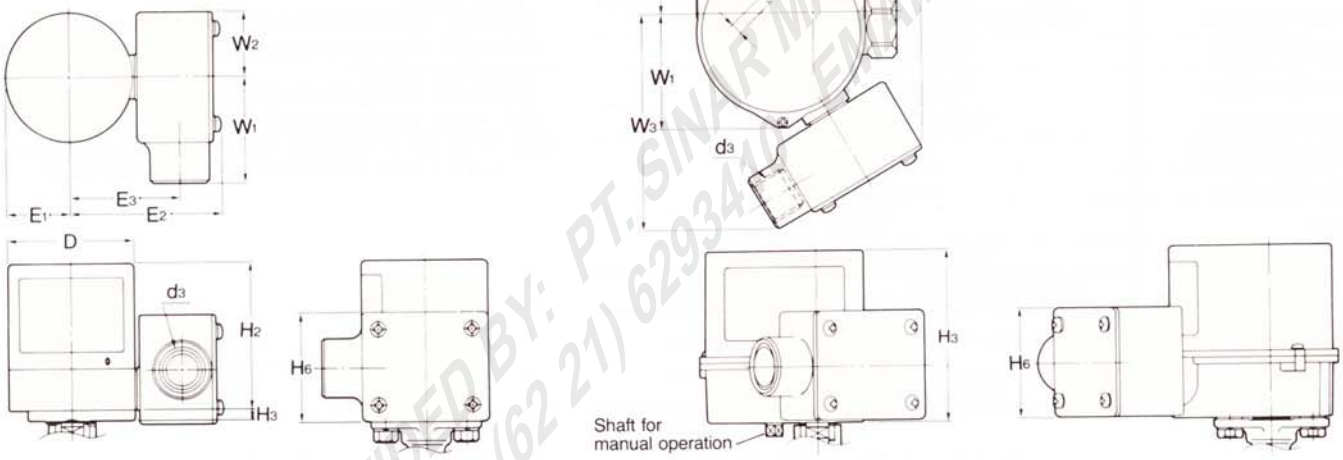
The circuit diagram is exactly same as the one for Type EA actuators.

Refer to Page 6.

Note: Terminal box (M3) is equipped for electric connection with the power source.

Fig. of actuator-to-valve assemblies

EAB100 / 200-TE
EAB100 / 200-TFE
EAB100 / 200-TLE
EAB100 / 200-TNE
EAB100 / 200-TGE
EAB100 / 200-TUE
EAB100 / 200-TLUE
EAB100 / 200-UTE
EAB100 / 200-UTFE
EAB100 / 200-UTGE
EAB100 / 200-5 / 10UTWE



Dimensions of actuator size 1 & 1.5 (mm)

d3	H2	H3	H6	E1	E2	E3	W1	W2	D
G½	70	5	52	30	72	52	49	30	60

Note: Actuator sizing for ball valves is exactly same as the one for Type EA actuators.

Dimensions of actuator size 2 (mm)

d3	H3	H6	E1	E2	E3	W1	W2	W3	S
G½	82	52	54.5	25	52	53	31.5	100	5.5

Note: Actuator sizing for ball valves is exactly same as the one for Type EA actuators.

Type EAR Electric Actuators / Class 10K Bronze or Stainless Steel Ball Valves

100V / 200V AC 50Hz / 60Hz

■ ***Built-in relay circuit for parallel drive of two or more actuators***

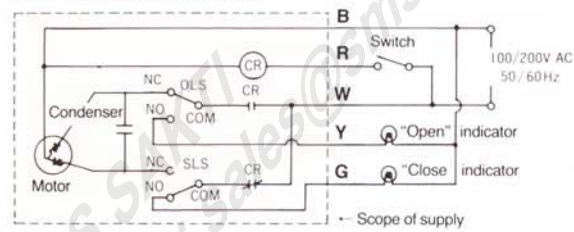
Type EAR actuator design specifications

Specification \ Type		EAR100-1	EAR200-1	EAR100-2	EAR200-2
Power source 50Hz/60Hz		100V AC	200V AC	100V AC	200V AC
Rated current		90mA	50mA	110mA	60mA
Max. power consumption		9W	10W	11W	12W
Valve closing time 90°	50Hz	4.8 sec.		15 sec.	
	60Hz	4.0 sec.		13 sec.	
Max. output torque		1.7N·m (18kgf·cm)		9.8N·m (100kgf·cm)	
Rated time		5 min.		Continuous	
Insulation class		JIS Class E			
Sensitive switch contact capacity		200V AC 1A (Resistan load)		250V AC 3A (Resistan load)	
Position limit switch		1 pce each for opening / closing (Using the source voltage)			
Insulation strength		1500V AC (1 min. interval)			
Insulation resistant		Minimum 10MΩ (500V DC)			
Standard protection		All weather type (for outdoor use)			
Ambient temperature		−20∼+50°C			
Mounting position		Vertical to horizontal			
Relay		Built-in			
Wiring		Vinyl cabtyre cord with 5 cores			
		0.3mm² (300 mm long)		0.5mm² (700 mm long)	
Lubrication		Grease			
Overload protection		Impedance protection			
Coating color		Housing: black Cover: light blue			

Type EAR actuator circuit diagrams

(with the valve fully closed)

EAR 100 / 200 Size 1, 2

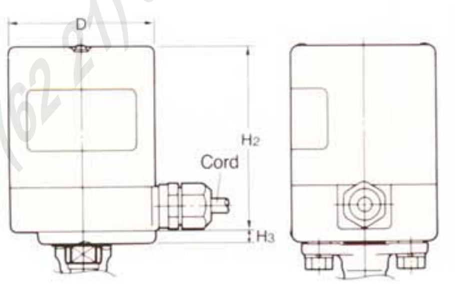


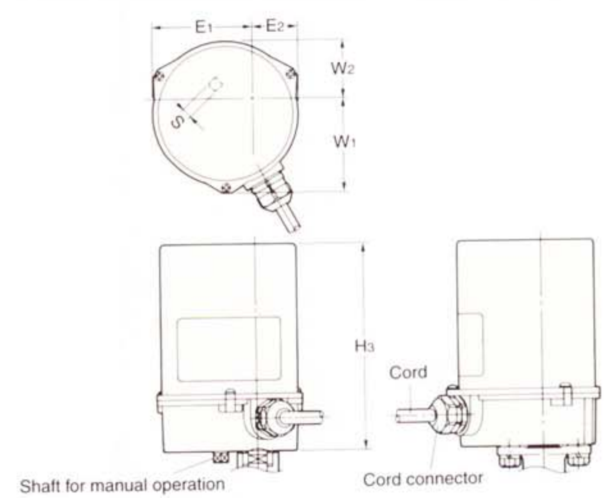
- Wire color: **B** black **R** red **W** white **Y** yellow **G** green
- Actuator rotates:
  Switch ON: Counter-clockwise to fully open the valve
  Switch OFF: Clockwise to fully close the valve
- Limit switches activate:
  OLS: on fully opening the valve (B-W: off W-Y: on)
  SLS: on fully closing the valve (B-W: off W-G: on)

Note: For all sizes of Type EARB 100 / 200, the terminals are numbered 1, 2, 3, 4 and 5 in place of B, R, W, Y and G respectively.

Fig. of actuator-to-valve assemblies

EAR100 / 200-TE
EAR100 / 200-TFE
EAR100 / 200-TLE
EAR100 / 200-TNE
EAR100 / 200-TGE
EAR100 / 200-TUE
EAR100 / 200-TLUE
EAR100 / 200-UTE
EAR100 / 200-UTFE
EAR100 / 200-UTGE
EAR100 / 200-5 / 10UTWE





Dimensions of actuator size 1

(mm)

H2	H3	D
75	5	60

Dimensions of actuator size 2

(mm)

H3	E1	E2	W1	W2	S
108.5	54.5	25	53	31.5	5.5

Note: Refer to Page 19 for actuator sizing for ball valves.

Type EARB Electric Actuators / Class 10K Bronze or Stainless Steel Ball Valves

100V / 200V AC 50Hz / 60Hz

- ***Built-in relay circuit for parallel drive of two or more actuators***
- ***Factory assembled terminal box for easier installation of actuators***

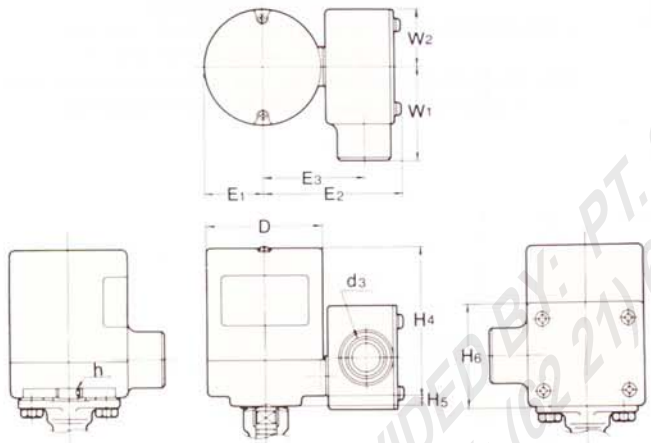
The circuit diagram is exactly same as the one for Type EAR actuators.

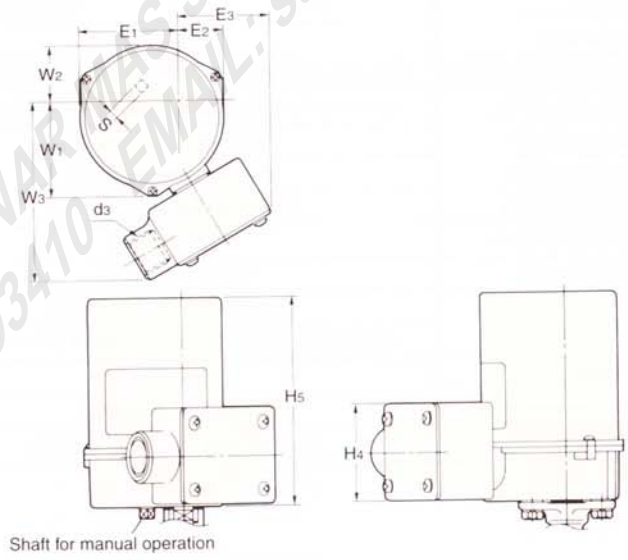
Refer to Page 18.

Note: Terminal box (M3) is equipped for electric connection with the power source.

Fig. of actuator-to-valve assemblies

EARB100 / 200-TE
EARB100 / 200-TFE
EARB100 / 200-TLE
EARB100 / 200-TNE
EARB100 / 200-TGE
EARB100 / 200-TUE
EARB100 / 200-TLUE
EARB100 / 200-UTE
EARB100 / 200-UTFE
EARB100 / 200-UTGE
EARB100 / 200-5 / 10UTWE





Shaft for manual operation

Dimensions of actuator size 1 (mm)

d3	H4	H5	H6	E1	E2	E3	W1	W2	D
G½	75	5	52	30	72	52.5	49	30	60

Dimensions of actuator size 2 (mm)

d3	H4	H5	E1	E2	E3	W1	W2	W3	S
G½	52	108.5	54.5	25	52	53	31.5	100	5.5

Guide of actuator sizing for Type EAR, EARB & ED

Fig. / Size (inch)	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
TE		EAR100/200-1, EARB100/200-1, ED12/24-1			EAR100/200-2, EARB100/200-2, ED12/24-2			
TFE			EAR100/200-1 EARB100/200-1		EAR100/200-2, EARB100/200-2			
TLE								
TNE	EAR100/200-1, EARB100/200-1, ED12/24-1				EAR100/200-2, EARB100/200-2, ED12/24-2			
TGE		EAR100/200-2, EARB100/200-2						
TUE			EAR100/200-1 EARB100/200-1					
TLUE								
UTE	EAR100/200-1, EARB100/200-1, ED12/24-1							
UTFE				EAR100/200-2 EARB100/200-2 ED12/24-2				
UTGE								
UTWE								

Type EAS Electric Actuators / Class 10K Vertical 3-way Bronze or Stainless Steel Ball Valves

100V / 200V AC 50Hz / 60Hz

- ***Automated change of flow direction***
- ***Choice of 3-way operation: 2 different flow passages and flow block without leakage***
- ***Exclusive mounting with KITZ TNVE & UTVE ball valves***

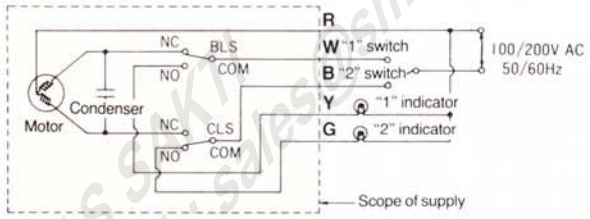
Type EAS actuator design specifications

Specification \ Type		EAS100-1	EAS200-1	EAS100-2	EAS200-2
Power source 50Hz/60Hz		100V AC	200V AC	100V AC	200V AC
Rated current		90mA	50mA	100mA	50mA
Max. power consumption		9W	10W	10W	10W
Valve closing time 180°	50Hz	9.6 sec.		30 sec.	
	60Hz	8.0 sec.		26 sec.	
Max. output torque		1.7N·m (18kgf·cm)		9.8N·m (100kgf·cm)	
Rated time		5 min.		Continuous	
Insulation class		JIS Class E			
Sensitive switch contact capacity		200V AC 1A (Resistan load)		250V AC 3A (Resistan load)	
Position limit switch		1 pce each for opening / closing (Using the source voltage)			
Insulation strength		1500V AC (1 min. interval)			
Insulation resistant		Minimum 10MΩ (500V DC)			
Standard protection		All weather type (for outdoor use)			
Ambient temperature		−20~+50°C			
Mounting position		Vertical to horizontal			
Wiring		Vinyl cabtyre cord with 5 cores			
		0.3mm² (300 mm long)		0.5mm² (700 mm long)	
Lubrication		Grease			
Overload protection		Impedance protection			
Coating color		Housing: black Cover: light blue			

Type EAS actuator circuit diagrams

(with the valve positioned at Form 2)

EAS 100 / 200 Size 1



- Wire color: **R** red **W** white **B** black **Y** yellow **G** green
- Actuator rotates: **R-W:** clockwise to Form 1
  R-B: counter-clockwise to Form 2
- Limit switches activate: BLS: at Form 1 (R-W: off W-Y: on)
  CLS: at Form 2 (R-B: off B-G: on)

Note: For all sizes of Type EASB 100 / 200, the terminals are numbered 1, 2, 3, 4 and 5 in place of R, W, B, Y and G respectively.

Type EAS Electric Actuators / Class 10K Vertical 3-way Bronze Ball Valves

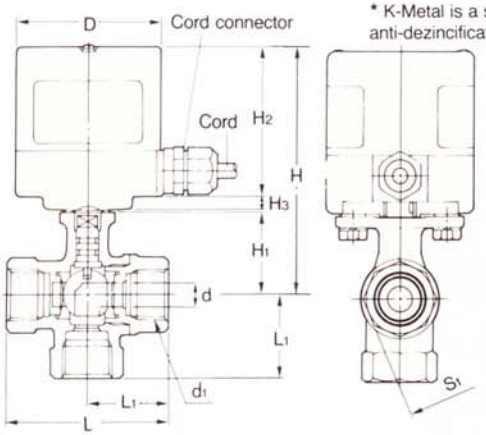
Fig. EAS100 / 200-TNVE

Actuator size: 1
Valve size: ½" & ¾" (Standard bore)

Valve material

Parts	JIS materials
Body	BC6
Body cap	C3771BE
Stem	K-Metal*
Ball	K-Metal* + Ni-Cr plating
Ball seat	PTFE
O-ring	FPM

* K-Metal is a special brass developed for anti-dezincification.



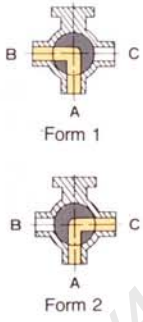
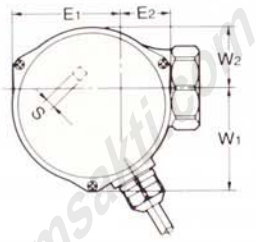
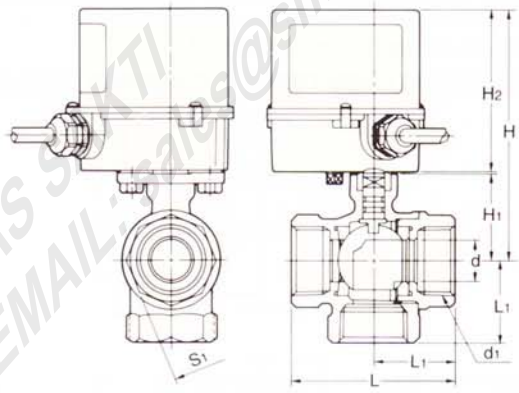


Fig. EAS100 / 200-TNVE

Actuator size: 2
Valve size: 1" & 1¼" (Standard bore)





Note: Refer to Page 22 for flow directional.
Products are adequately identified with nameplates indicating either one of Form 1 or Form 2.

Dimensions (mm)

Valve size (inch)	d	d1	H	H1	L	L1	S1	Actuator H2	Actuator H3	Actuator D	Actuator Type
½	10	Rc½	99.5	33.5	67	33.5	28	60	5	60	EAS 100/200-1
¾	15	Rc¾	103.5	37.5	68	34	34				

Dimensions (mm)

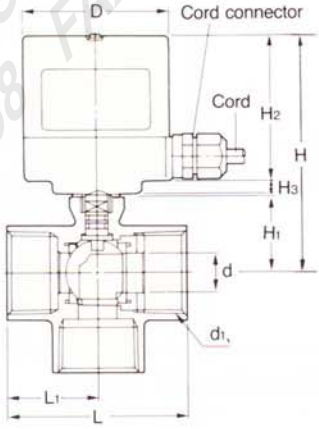
Valve size (inch)	d	d1	H	H1	L	L1	S1	Actuator H2	Actuator E1	Actuator E2	Actuator W1	Actuator W2	Actuator S	Actuator Type
1	20	Rc1	124.5	41.5	79	39.5	41	82	54.5	25	53	31.5	5.5	EAS 100/200-2
1¼	25	Rc1¼	129.5	46.5	89	44.5	50							

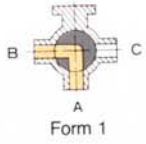
Note: Contact KITZ for technical advice when valve operation at an intermediate position is required.

Type EAS Electric Actuators / Class 10K Vertical 3-way Stainless Steel Ball Valves

Fig. EAS100 / 200-UTVE

Actuator size: 1
Valve size: ¼" to 1" (Reduced bore)





Valve material

Parts	JIS materials
Body	SCS14A
Stem	SUS316+Cr plating
Ball	SUS316
Ball seat	PTFE
O-ring	FPM

Note: Refer to Page 22 for flow directional.
Products are adequately identified with nameplates indicating either one of Form 1 or Form 2.

Dimensions (mm)

Valve size (inch)	d	d1	H	H1	L	L1	S1	Actuator H2	Actuator H3	Actuator D	Actuator Type
¼	4.5	Rc¼	91.5	25.5	44	21	21	60	5	60	EAS100 / 200-1
⅜	6.8	Rc⅜	91.5	25.5	44	21	21				
½	8.5	Rc½	92	26	58	29	25				
¾	11.5	Rc¾	94.5	28.5	61.5	31.5	32				
1	15	Rc1	97.5	31.5	74	37.5	38				

Note: Contact KITZ for technical advice when valve operation at an intermediate position is required.

Type EASB Electric Actuators / Class 10K Vertical 3-way Bronze or Stainless Steel Ball Valves

100V / 200V AC 50Hz / 60Hz

- ***Automated change of flow direction***
- ***Choice of 3-way operation: 2 different flow passages and flow block without leakage***
- ***Factory assembled terminal box for easier installation of actuators***
- ***Exclusive mounting with KITZ TNVE & UTVE ball valves***

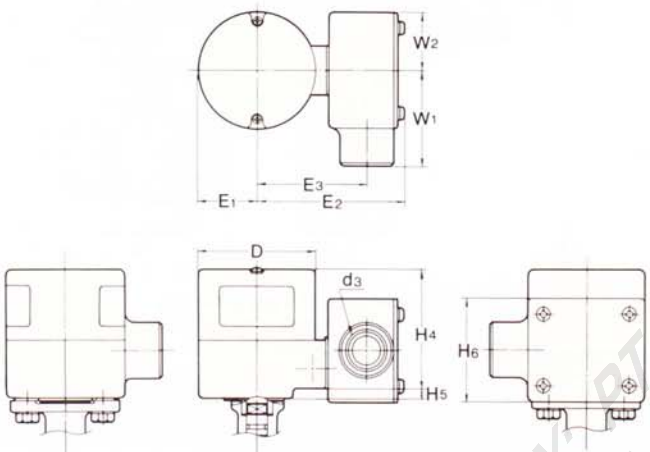
The circuit diagram is exactly same as the one for Type EAS actuators.

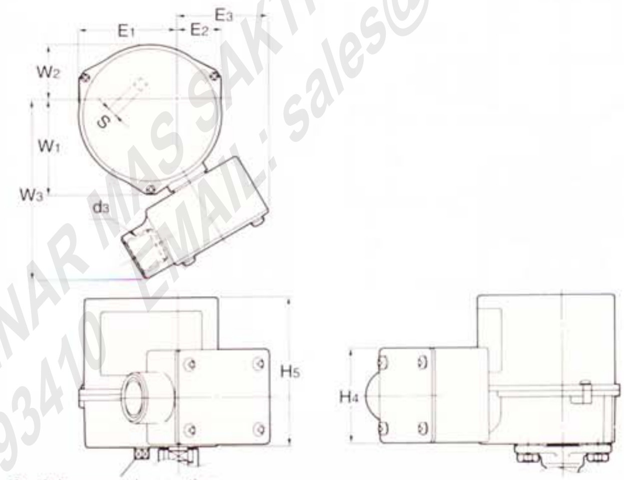
Refer to Page 20.

Note: Terminal box (M3) is equipped for electric connection with the power source.

Fig. of actuator-to-valve assembly

EASB100 / 200-TNVE EASB100 / 200-UTVE





Dimensions of actuator size 1 (mm)

d_3	H_4	H_5	H_6	E_1	E_2	E_3	W_1	W_2	D
G½	60	5	52	30	72	52.5	49	30	60

Dimensions of actuator size 2 (mm)

d_3	H_4	H_5	E_1	E_2	E_3	W_1	W_2	W_3	S
G½	52	82	54.5	25	52	53	31.5	100	5.5

KITZ 3-way Compact Ball Valves: Change of Flow Directional Form

KITZ horizontal 3-way ball valves are principally used for quick change of flow direction. Also 3-way ball valves can be used for simplification of piping systems as shown in Fig. 1.

KITZ Fig. TNE, TNVE, TKVE and UTVE 3-way ball valves are provided with L-port and double face seating design for change of flow direction between Form 1 and 2. It should be noted that, if the line pressure of the closed bore is higher than that of the open bores, a small rate of fluid leakage may occur from the closed bore. (Fig. 2)

Fig. 1

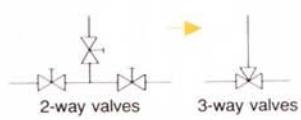
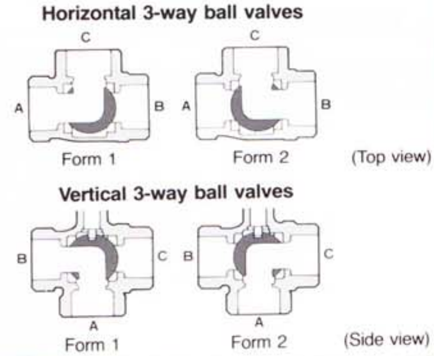


Fig. 2

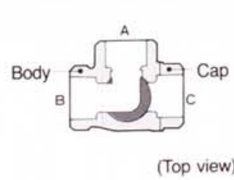


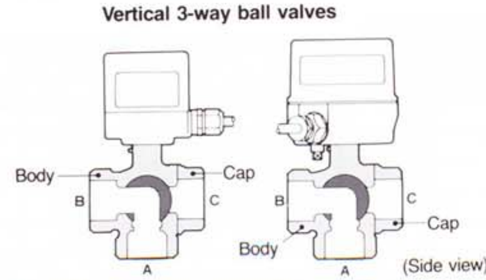
KITZ 3-way Compact Ball Valves: Flow Directional Form

Shipment shall be made with the directional modes fixed as illustrated here. (Fig. 3)

Location of cord connectors (top view):
H-3-way: Size 1 & 1.5: Right hand side
Size 2: Lower right
V-3-way: Size 1: Right hand side
Size 2: Lower left

Fig. 3





Type EC, ECR, ECS and ECSR Electric Actuators / Class 10K Brass Ball Valves

100V / 200V AC 50Hz / 60Hz

- ***Economy version of KITZ EA series driven ball valves (designed for incorperation in other equipment)***
- ***Exclusive mounting KITZ TKE ball valves***
- ***90° or 180° Uni-directional drive***
- ***Automated change of flow direction***
- ***Choice of 3-way operations: 2 different flow passages and flow block without leakage***

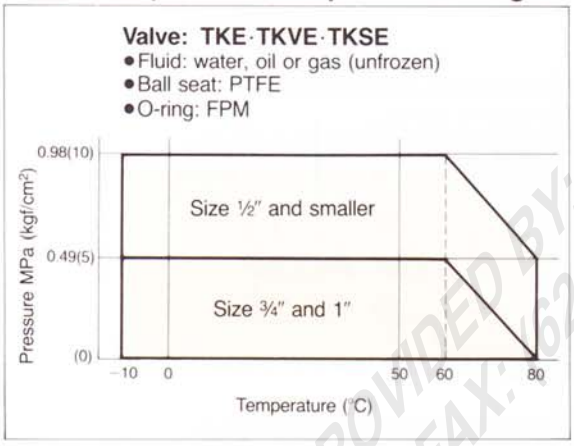
Valve design specifications

Threaded ends: JIS B 0203

Maximum service pressure
½" and smaller: 0.98MPa (10kgf/cm²)
¾" and 1": 0.49MPa (5kgf/cm²)

Test pressure
Body: 2.06MPa (21kgf/cm²) Hydrostatic
Seat: 0.59MPa (6kgf/cm²) Pneumatic

PTFE seat pressure-temperature ratings



Type EC, ECR, ECS and ECSR actuator design specifications

Specification \ Type		EC100 / 200 ECR100 / 200	ECS100 / 200 ECSR100 / 200
Power source 50Hz/60Hz		100 / 200V AC	100 / 200V AC
Rated current		50mA / 30mA	
Max. power consumption		About 4W	
Valve closing time 90° / 180°	50Hz	4.5 sec.	9 sec.
	60Hz	3.8 sec.	7.6 sec.
Max. output torque		0.98N·m (10kgf·cm)	
Rated time		Continuous	
Insulation class		JIS Class E	
Sensitive switch contact capacity		200V AC 1A Resistan load	
Position limit switch		1 pce each for opening / closing (using the source voltage)	
Insulation strength		1500V AC (1 min. interval)	
Insulation resistant		Minimum 10MΩ (500V DC)	
Standard protection		All weather type (for outdoor use)	
Ambient temperature		−10°C to +60°C	
Mounting position		Vertical to horizontal	
Relay		Built-in for Type ECR and ECSR	
Wiring		Vinyl cabtyre cord with 5 cores (0.3mm², 300mm long)	
Lubrication		Grease	

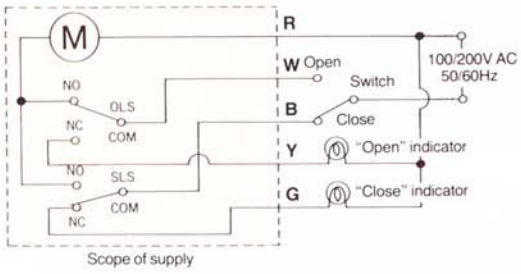
Note: Refer to Page 2 and 3 for design features, applications flow coefficient of ball valves.

⚠ CAUTION

Actuator housings are made of polyacetal. Don't use these actuators in an atmosphere which contains corrosive gases such as chloride, and solvents such as chloroethylene or methylene chloride.

Actuator circuit diagrams

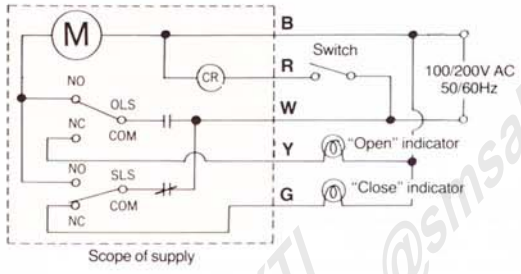
Type EC (with the valve fully closed)



- Wire color: **R** red **W** white **B** black **Y** yellow **G** green
- Actuator rotates:
  R-W: clockwise to fully open the valve
  R-B : clockwise to fully close the valve
- Limit switches activates:
  OLS: on fully opening the valve (R-W: off W-Y: on)
  SLS: on fully closing the valve (R-B: off B-G: on)

Note: (1) When two or more actuators are driven by a single switch, ensure to prevent unintended current flows using relay contacts.
(2) Switching the actuator for opening (closing) operation of the valve being actuated to close (open) will make the valve once fully open (close), and then immediately reverse the operating direction.

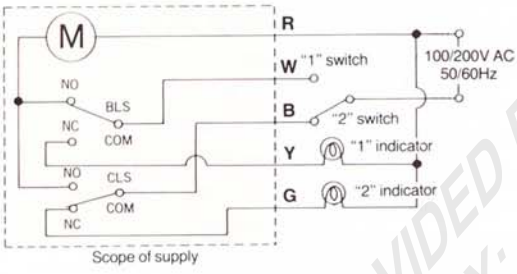
Type ECR (with the valve fully closed)



- Wire color: **R** red **W** white **B** black **Y** yello **G** green
- Actuator (top view):
  ON : clockwise to fully open the valve
  OFF: clockwise to fully close the valve
- Limit switches activates:
  OLS: on fully opening the valve (R-W: off W-Y: on)
  SLS: on fully closing the valve (B-W: off W-G: on)

Note: Switching the actuator for opening (closing) operation of the valve being actuated to close (open) will make the valve once fully open (close), and then immediately reverse the operating direction.

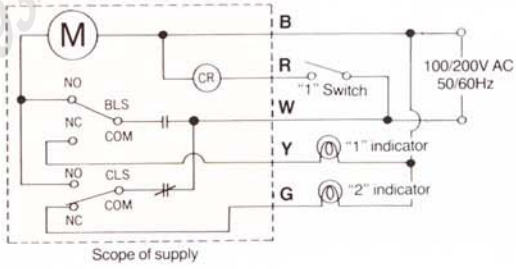
Type ECS (with the valve positioned at Form 2)



- Wire color: **R** red **W** white **B** black **Y** yellow **G** green
- Actuator rotates (top view):
  R-W: clockwise to stop the valve at Form 1
  R-B : clockwise to stop the valve at Form 2
- Limit switches activates:
  BLS: at Form 1 (R-W: off W-Y: on)
  CLS: at Form 2 (R-B: off B-G: on)

Note: (1) When two or more actuators are driven by a single switch, ensure to prevent unintended current flows using relay contacts.
(2) Switching the actuator for opening (closing) operation of the valve being actuated to close (open) will make the valve once fully open (close), and then immediately reverse the operating direction.

Type ECSR (with the valve positioned at Form 2)



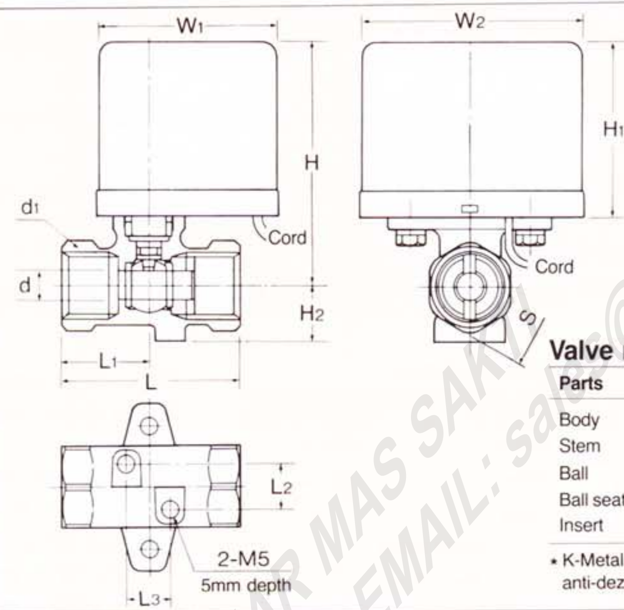
- Wire color: **R** red **W** white **B** black **Y** yellow **G** green
- Actuator rotates (top view):
  ON : clockwise to stop the valve at Form 1
  OFF: clockwise to stop the valve at Form 2
- Limit switches activates:
  BLS: at Form 1 (R-W: off W-Y: on)
  SLS: at Form 2 (B-W: off W-G: on)

Note: Switching the actuator for opening (closing) operation of the valve being actuated to close (open) will make the valve once fully open (close), and then immediately reverse the operating direction.

Type EC·ECR Electric Actuators / Class 10K Brass Ball Valves

Fig. **EC100 / 200-TKE**
ECR100 / 200-TKE (Built-in relay)

Valve size: ¼" to 1" (Reduced bore)



Valve material

Parts	JIS materials
Body	C3771BE
Stem	K-Metal* + Cr plating
Ball	K-Metal* + Ni-Cr plating
Ball seat	PTFE
Insert	C3771BE

* K-Metal is a special brass developed for anti-dezincification

Dimensions

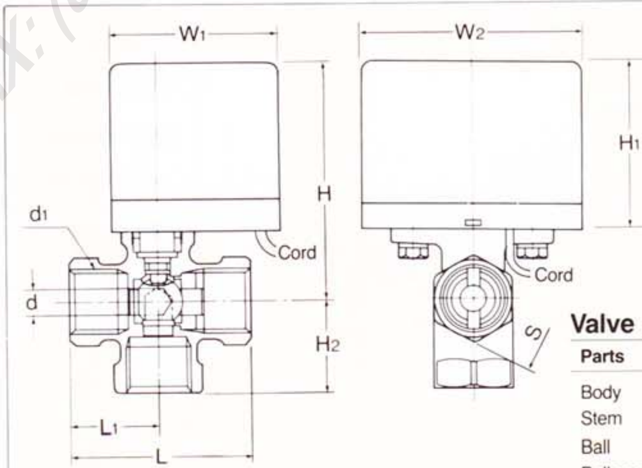
(mm)

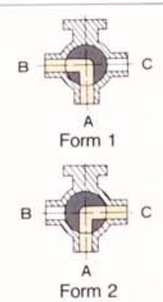
Valve size (inch)	d	d1	H	H2	L	L1	L2	L3	S	Actuator H1	Actuator W1	Actuator W2	Actuator Type
¼	4.5	Rc¼	76.5	15	44	21	14	14	21				
⅜	6.8	Rc⅜	76.5	15	44	21	14	14	21				
½	8	Rc½	77.5	17	56.5	27.5	14	14	25	55	58	71	EC100/200-1 ECR100/200-1
¾	11	Rc¾	80	20	59	30	17	16	32				
1	14.5	Rc1	83	22	74	37.5	22	15	38				

Type ECS·ECSR Electric Actuators / Class 10K Vertical 3-way Brass Ball Valves

Fig. **ECS100 / 200-TKVE**
ECSR100 / 200-TKVE (Built-in relay)

Valve size: ½" to 1" (Reduced bore)





Valve material

Parts	JIS materials
Body	C3771BE
Stem	K-Metal* + Cr plating
Ball	K-Metal* + Ni-Cr plating
Ball seat	PTFE
Insert	C3771BE

* K-Metal is a special brass developed for anti-dezincification

Note: Refer to Page 22 for flow directional.
Products are adequately identified with nameplates indicating either one of Form 1 or Form 2.

Dimensions

(mm)

Valve size (inch)	d	d1	H	H1	L	L1	S1	Actuator H1	Actuator W1	Actuator W2	Actuator Type
½	8	Rc½	77.5	29	56.5	27.5	25				
¾	11	Rc¾	80	33	60	30	32	55	58	71	ECS100/200-1 ECSR100/200-1
1	14.5	Rc1	83	39.5	74	37.5	38				

KELMO® EAE Series Actuator Driven KITZ Compact Ball Valves

KELMO® EAE Series Spring Return Electric Actuators

100V / 200V AC 50Hz / 60Hz

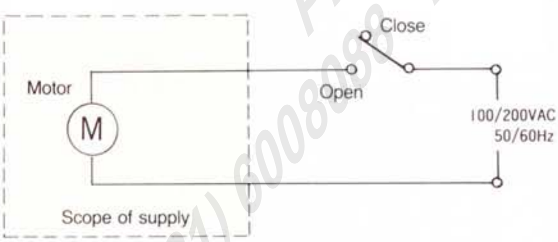
- ***Two-wire power supply system for easy replacement of conventional solenoid valves as a valve actuating device.***
- ***Modest operating speed with no concern of water hammer, which is problem for conventional solenoid valves.***
- ***Availability of manual operation.***
- ***Auto-lock provision on turn-off of actuators while the valve is left open.***

Type EAE actuator design specifications

Specification \ Type		EAE100-1	EAE200-1
Power source 50Hz / 60Hz		100V AC	200V AC
Rated current		200mA	100mA
Max. power consumption		8.5W	7.2W
Valve closing time 90°	50Hz/60Hz	About 10 sec.	
	Spring return	About 20 sec.	
Rated time		Continuous	
Insulation class		JIS Class E	
Insulation strength		1500V AC (1 min. interval)	
Insulation resistant		Minimum 100MΩ (500V DC)	
Standard protection		For indoor use*	
Ambient temperature		−10∼+50°C	
Mounting position		Vertical to horizontal	
Wiring		0.3mm² lead wire	
Lubrication		Grease	
Coating color		Housing: black	Cover: light blue

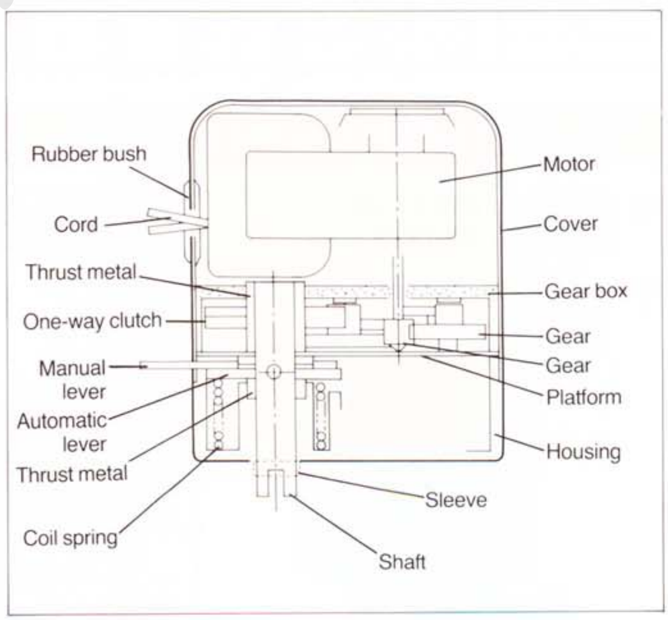
*Outdoor use or use in spray falls or excessively humid atmosphere is not recommended.

Actuator circuit diagrams



Operating mechanism

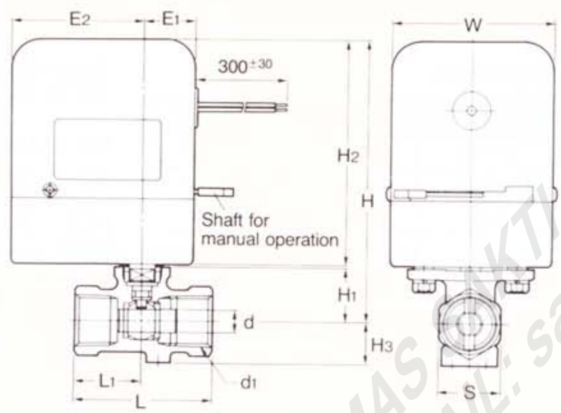
- The basic mechanical structure is given in the illustration below.
- Energizing an actuator rotates a motor and transfer the torque to a one-way clutch via reducing gears. The torque will be, then, transferred to the shaft and open the valve, while winding up the core spring symultaneously.
- 90° rotation of the shaft activates an automatic lever to contact a stopper and stay in thus fixed position, while the actuator remains energized.
- De-energizing an actuator activates the valve ball to rotate clockwise to its closed position, by means of repulsing force of the coil spring.



Type EAE Electric Actuators / Class 10K* Bronze, Brass or Stainless Steel Ball Valves

Fig. of actuator-to-valve assemblies

EAE100 / 200-TKSE*
EAE100 / 200-TE (⅜" & ½")
EAE100 / 200-TNE* (¼" to ½")
EAE100 / 200-TUE (½")
EAE100 / 200-UTE (¼" to ½")



The drawing shows EAE100 / 200-TKSE

Valve material

Parts	JIS materials
Body	C3771BE
Stem	K-Metal* + Cr plating
Ball	K-Metal* + Ni-Cr plating
Ball seat	PTFE
Insert	C3771BE

* K-Metal is a special brass developed for anti-dezincification

Dimensions Fig. EAE100 / 200-TKSE

(mm)

Valve size (inch)	d	d_1	H	H_1	H_3	L	L_1	S	Actuator				
									H_2	E_1	E_2	W	Type
¼	4.5	Rc¼	114.5	21.5	15	44	21	21	92	21	54	66	EAE100 / 200-1
⅜	6.8	Rc⅜	114.5	21.5	15	44	21	21					
½	8	Rc½	115.5	22.5	17	56.5	27.5	25					
¾	11	Rc¾	118	25	20	59	30	32					

* 5K service pressure for ¾" TKSE, ½" TE and ½" TNE. Refer to Page 23 for valve design specifications and PTFE seat pressure-temperature ratings.

Note: • Terminal box and cabtyre cables are available for option.
• Type EAE actuators can be operated only for full opening or closing actuated valves. Don't disturb closing operation activating intended or unintended reverse operation.

⚠ Cautions for use of EAE actuators

- These actuators have no provision of explosion-proof and should not be used in an explosive atmosphere. They have no provision of airtight enclosure and are not recommended for use in corrosive gaseous or excessively humid atmosphere, or in spray falls.
- These actuators are designed only for on-off fluid control by means of full opening or closing of valves. Don't use them for partial opening or closing for intermediate valve positioning.
- Excessively high frequency of operation such as 20 cycles per hour may affect service life of actuators. Application to air-conditioning or ventilation service may cause this problem.
- Don't use them for handling highly viscous fluids containing particles, muds or sands.
- Actuator housings are made of PBT resin. To avoid damages, don't place any other heavy objects on actuators, or don't step on actuators.

Type ED Electric Actuators / Class 10K Bronze or Stainless Steel Ball Valves

12V / 24V DC 50Hz

■ ***DC 12V or 24V for handy, on-the-spot automated valve operation***

Type ED actuator design specifications

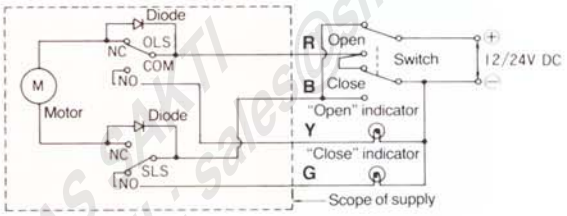
Specification \ Type		ED-12-1	ED-24-1	ED-12-2	ED-24-2
Power source		12V DC	24V DC	12V DC	24V DC
Rated current		360mA	140mA	520mA	260mA
Starting current		0.4A	0.5A	1.9A	0.95A
Max. power consumption		5W	4W	9W	10W
Valve closing time 90°	50Hz	About 5 sec.			
Max. output torque		1.4N·m (15kgf·cm)		7.3N·m (75kgf·cm)	
Rated time		5 min.			
Insulation class		JIS Class E			
Position limit switch		1 pce each for opening / closing (Using the source voltage)			
Insulation strength		250V DC (1 min. interval)		500V DC (1 min. interval)	
Insulation resistant		Minimum 10MΩ (250V DC)			
Standard protection		All weather type (for outdoor use)			
Ambient temperature		−20~+50°C			
Mounting position		Vertical to horizontal			
Power cord		Vinyl cabtyre cord with 5 cores		UL approved noninflammable cord with 5 cores	
		0.3mm²		0.5mm²	
Lubrication		Grease			
Overload protection		Impedance protection		Thermal protection	
Coating color		Housing: black		Cover: light blue	

Note: Type ED 12-2 and ED24-2 are optionally available for mobile application. Don't splash high pressure water directly to Type ED actuator during car wash.

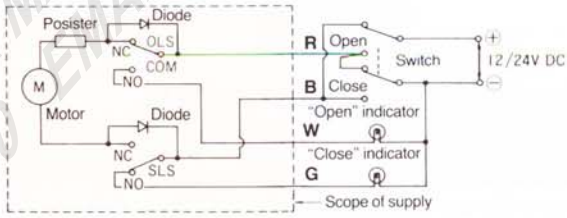
Type ED actuator circuit diagrams

(with the valve fully closed)

ED 12 / 24 Size 1



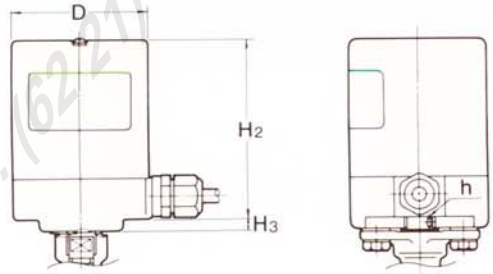
ED 12 / 24 Size 2

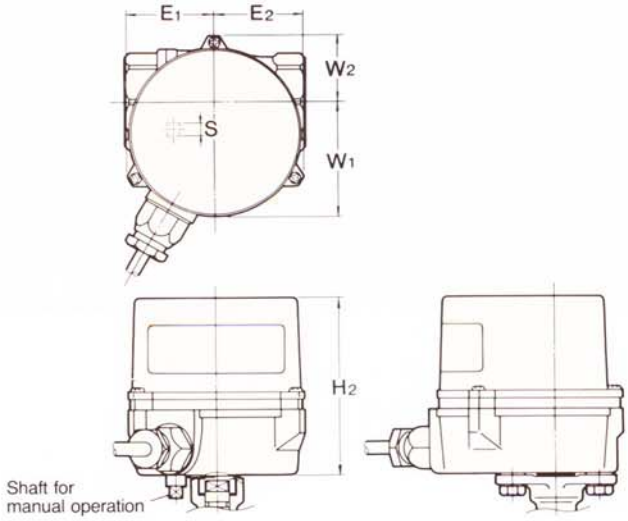


- Wire color: **R** red **B** black **Y** yellow **G** green **W** white
- Actuator rotates:
  R⊕ - B⊖: Counter-clockwise to fully open the valve
  R⊖ - B⊕: Clockwise to fully close the valve
- Limit switches activate:
  OLS: on fully opening the valve (R-B: off R-Y(W): on)
  SLS: on fully closing the valve (R-B: off B-G: on)

Fig. of actuator-to-valve assemblies

ED12 / 24-TE
ED12 / 24-TNE
ED12 / 24-UTE
ED12 / 24-UTFE
ED12 / 24-UTGE
ED12 / 24-5 / 10UTWE





Dimensions of actuator size

(mm)

H2	H3	D	h
78	5	60	4

Dimensions of actuator size 2

(mm)

H2	E1	E2	W1	W2	S
79	39	39	52	30	5.5

Note: Refer to Page 19 for actuator sizing for ball valves.

Precautions for Trouble-free Operation

Storage and Handling

Electrically operated KITZ compact ball valves are individually packed in styrofoam boxes. Don't unpack until you are ready to mount on the pipeline. Store in dry, corrosion-free environment to keep rust-free, although they are adequately coated for primary protection. Handle units carefully when actuators are equipped with solenoid valves and other accessories. Don't place any other objects on actuators, and don't step on actuators. Overloading actuators must always be prevented.

Mounting and Piping

Before mounting electrically operated KITZ compact ball valves, make visual inspection of all valves, actuators and accessories to assure trouble-free condition. Tighten any loosened boltings securely. Clean valve and pipe bores to remove welding spatters, scales or any other foreign objects which may have been left inside. After mounting has been completed, blow the inside of all connected pipes and valves prior to the pilot operation of the system.

Don't use them in explosive or corrosive gaseous conditions, to avoid explosions, or defects to terminal contacts.

Wiring and Operation

Color-coded wires should be connected to each correct terminal according to the actuator circuit diagram shown on each page of this catalog. Incorrect wiring may damage electric components and accessories.

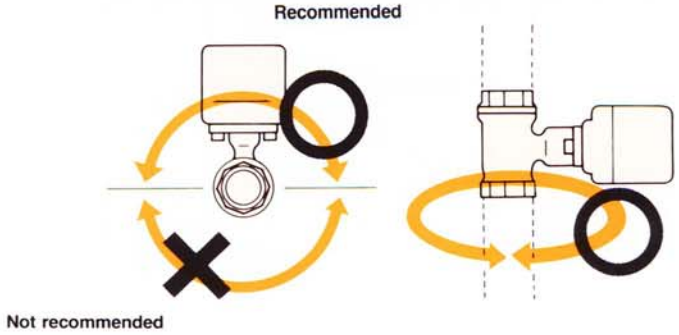
The following actuator are not provided with built-in relays. For parallel operation with other actuators, be sure to deploy a separate relay for each valve to drive.

EA	**EC**
EAB	**ECS**
EAS	**EAE**
EASB	**ED**

When valve opening or closing indicator lamp is not required, cut the exposed part of the wire end and isolate it from the electric current. Before manual operation, be sure to turn off the switch.

Maintenance

Disassembly of actuators is not recommended. Electrically operated KITZ compact ball valves can be mounted vertically, horizontally or with any intermediate angle as illustrated here. However, don't mount any lower than the horizontal level, as intrusion of rainwater may affect the quality of electric components and accessories.



⚠ CAUTION

Pressure-temperature ratings and other performance data published in this catalog have been developed from our design calculation, in-house testing, field reports provided by our customers and/or published official standards or specifications. They are good only to cover typical applications as a general guideline to users of KITZ products introduced in this catalog.

For any specific application, users are kindly requested to contact KITZ Corporation for technical advice, or to carry out their own study and evaluation for proving suitability of these products to such an application. Failure to follow this request could result in property damage and/or personal injury, for which we shall not be liable.

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KITZ

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