KITZ

Actuator Driven Compact Ball Valves

■KELMO® Electric Actuators: EA, EC, EAE, ED and ES Series
■Pneumatic Actuators: C, CS, FBS Series
■¼″ to 2″ Class 5K/10K Bronze and Stainless Steel Threaded Ball Valves

KITZ CORPORATION

Contents

KELMO® Electric Actuators Driven Threaded Ball Valves

*Actuator rotation: B.D.=Bidirectional, U.D.=Unidirectional

**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**	End connection	Size	
EAH 100 V AC 200 V AC	EAH100/200-TNVE	180 B.D.	EA for 180 °turn (Basic)	Bronze	Vertical 3-way	Short	S.B.	Threaded	½" to 1¼"	19
	EAH100/200-UTVE			Stainless steel	Vertical 3-way	Short	R.B.	Threaded	¼" to 1"	
EAHB 100 V AC 200 V AC	EAHB100/200-TNVE		EAH with terminal box	Bronze	Vertical 3-way	Short	S.B.	Threaded	½" to 1¼"	20
	EAHB100/200-UTVE			Stainless steel	Vertical 3-way	Short	R.B.	Threaded	¼" to 1"	
EC 100 V AC 200 V AC	EC100/200-TKE *1	90 U.D.	Economy version of EA (Basic)	Brass	2-way	Short	R.B.	Threaded	¼" to¾"	22
EAE 100 V AC 200 V AC	EAE100/200-TE*2	90 B.D.	Spring-return	Bronze	2-way	Short	S.B.	Threaded	⅜" & ½"	24
	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" to¾"	
ED 12 V DC 24 V DC	ED12/24-TE	90 B.D.	DC (Basic Version)	Bronze	2-way	Short	S.B.	Threaded	⅜" to 2"	26
	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"	
	ED12/24-5/10UTWE			Stainless steel	2-way	Short	F.B.	Wafer	⅜" to 1"	
ES 100 V AC 200 V AC	ESA100/200-TASE	90 B.D.	For compact Values (Basic)	Brass	2-way	Short	R.B.	Threaded	½" to1"	28
	ESA100/200-UTASE			Stainless steel	2-way	Short	R.B.	Threaded	½" to1"	

*1 ¾" of TKE is for 5K service.
*2 ½" of TE, ½" of TNE and ¾" of TKSE are for 5K service.

C·CS/FBS Series pneumatic Actuators Driven Threaded Ball Valves

Type	KITZ Fig.	Actuator		Threaded Ball valves						Page
		Rotation*	Function	Material	Port	Neck	Bore**	End connection	Size	
C	C-TE	90 B.D.	Double action	Bronze	2-way	Short	S.B.	Threaded	⅜" to 2"	32
	C-TFE			Brass or Bronze	2-way	Short	F.B.	Threaded	½" to 1½"	33
	C-TLE			Bronze	2-way	Long	S.B.	Threaded	½" to 2"	34
	C-TNE			Bronze	Horizontal 3-way	Short	S.B.	Threaded	¼" to 2"	35
	C-TUE			Bronze	2-way	Short	R.B.	Male & female threaded	½" & ¾"	36
	C-UTE			Stainless	2-way	Short	R.B.	Threaded	½" to 2"	37
	C-UTFE			Stainless	2-way	Short	F.B.	Threaded	½" to 2"	38
	C-UTGE			Stainless	2-way	Short	R.B.	Threaded (with gland)	¼" to 1"	39
	C-5/10UTWE			Stainless	2-way	Short	F.B.	Wafer	⅜" to 1"	40
CS/ FBS	CS/FBS-TE	90 B.D.	Spring-return	Bronze	2-way	Short	S.B.	Threaded	⅜" to 2"	32
	CS-TFE			Brass or Bronze	2-way	Short	F.B.	Threaded	½"	33
	CS/FBS-TLE			Bronze	2-way	Long	S.B.	Threaded	½" to 2"	34
	CS/FBS-TNE			Bronze	Horizontal 3-way	Short	S.B.	Threaded	¼" to 1"	35
	CS-TUE			Bronze	2-way	Short	R.B.	Male & female threaded	½" & ¾"	36
	CS/FBS-UTE			Stainless	2-way	Short	R.B.	Threaded	¼" to 2"	37
	CS/FBS-UTFE			Stainless	2-way	Short	F.B.	Threaded	½" to 1½"	38
	CS/FBS-UTGE			Stainless	2-way	Short	R.B.	Threaded (with gland)	¼" to 1"	39
	CS/FBS-5/10UTWE			Stainless	2-way	Short	F.B.	Wafer	⅜" to 1"	40

*Actuator rotation: B.D.=Bidirectional, U.D.=Unidirectional
**Bore design: F.B.=Full bore, S.B.=Standard bore, R.B.=Reduced bore

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 speedy maintenance.
- Tight contact between PTFE ball seats and high precision machined balls for leakage-free service.
- Stems, made of high strength brass, are used for longer service life.
- 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:	1.0 MPa TKE and TKSE for ¾" and larger, 5UTWE: 0.5 MPa
Seat P-T rating:	See Page 2

Ball valve design and applications

KITZ Fig.	JIS Material	Port	Bore*	Neck	End Connection	Applications	Electric Actuator	Pneumatic Actuator
TE	CAC406	2-way	S.B.	Short	Threaded	On-off control of water, oil, and gas.	EA EAB EAL EALB ED** EAE**	Type C & CS (FBS)
TFE	C3771 or CAC406		F.B.					
TLE	CAC406		S.B.	Long		Insulation for thermal isolation.		
TNE		Horizontal 3-way		Short		Instantaneous change of line fluid.		
TUE		2-way	R.B.		Male and female threaded	Easy installation.		Type C & CS
TKE	Chrome plating C3771			Short	Threaded	On-off control of water, oil and gas. M5 tapped for panel mounting.	EC	
TKSE		2-way				On-off control of water, oil and gas. M5 tapped for panel mounting.	EAE**	
TNVE	CAC406	Vertical 3-way	S.B.			Instantaneous change of line fluid. (Free from concern of fluid mixing.)	EAH EAHB	
TASE	C3771	2-way	R.B.			On-off control of water, oil and gas. M5 tapped for panel mounting.	ES**	
UTE	SCS14A	2-way	R.B.			TE made of stainless steel.	EA EAB EAL EALB ED EAE**	Type C & CS (FBS)
UTFE			F.B.			TEE made of stainless steel.		
UTGE			R.B.			TGE made of stainless steel.		
5/10UTWE	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. (Free from concern of fluid mixing.)	EAH EAHB	
UTASE	SCS13A	2-way	R.B.			On-off control of water, oil and gas. M5 tapped for panel mounting.	ES**	

*Bore design: F.B.=Full bore, S.B.=Standard bore, R.B.=Reduced bore to API 608.
**ED Series are available only for TE, TNE, UTE, UTFE, UTGE and 5/10UTWE ball valves.
EAE Series are available only for TE, TNE, TUE, TKSE and UTE ball valves.
ES Series are available only for TASE, UTASE 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, dirt or sands.
② Contact KITZ or its local distributors for technical advice on application to:
- Fluid of high viscosity, steam or vacuum.
- Velocity of 3 m/s or faster.
- Service with concern of an extraordinary pressure rise of line fluid or a variation of fluid temperature higher than 60℃.
- For voltages other than KITZ standard specification.
- Use of equipment that put human lives at risk.

KITZ 10K Compact Ball Valves

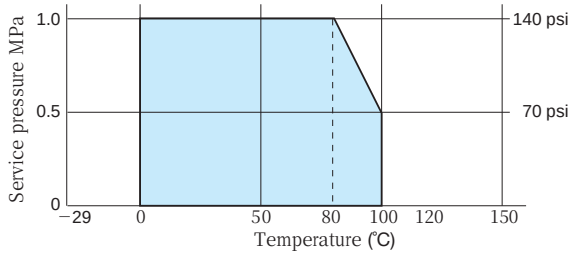
Valve flow coefficient (Cv for fully opened valves)

KITZ Fig. \ Size (inch)	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
TE·TLE*	—	2.1	5.6	15	27	45	85	120
TNE	0.5	1	3	6	11	17	28	37
TUE	—	—	3	6.2	—	—	—	—
TKE·TKSE*	0.9	2.4	3.4	6.1	—	—	—	—
TNVE	—	—	3	7.3	13	17	—	—
TASE	—	—	5	8	15	—	—	—
UTE·UTGE*·UTASE*	1	2	5	8	15	20	37	60
TFE·UTFE	—	—	18	46	58	92	170	—
5/10UTWE	—	6.5	18	46	58	—	—	—
UTVE	0.5	1	2.2	3.9	7	—	—	—

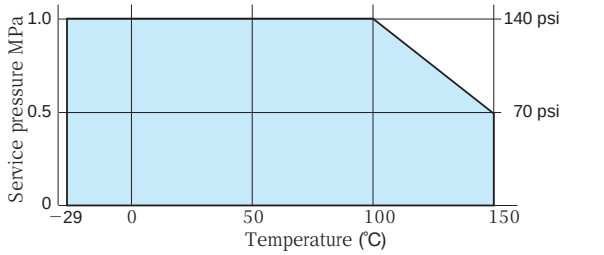
*1/2" and larger for TLE. 3/4" and smaller for TKSE, 1" and smaller for UTGE, and 1/2" to 1" for UTASE.

PTFE seat pressure-temperature ratings

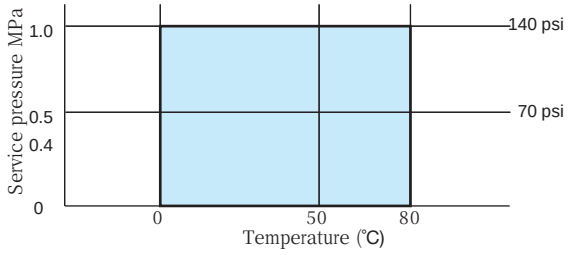
Valve: TE·TFE·TLE·TNE·TUE·UTE·UTFE·5/10UTWE
- Fluid: water, oil, gas (unfrozen)
- Ball seat: PTFE (Standard)
- O-ring: FKM (Standard)



Valve: UTGE
- Fluid: water, oil or gas (unfrozen)
- Ball seat: reinforced PTFE
- Gland packing: Flexible graphite+PTFE braided packing

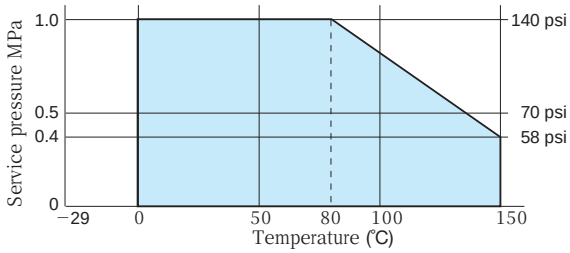


Valve: TASE·UTASE
- Fluid: water, oil, gas (unfrozen)
- Ball seat: PTFE (standard)
- O-ring: FKM (standard)

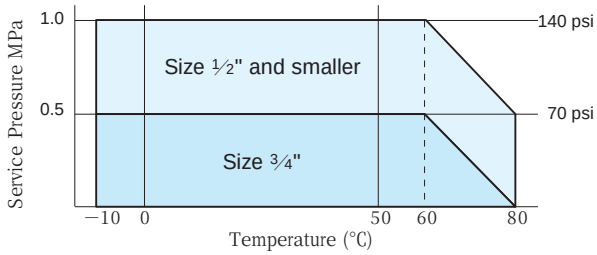


for saturated steam

Valve: TE·TFE·TLE·TNE·TUE·TLUE·UTE·UTFE·5/10UTWE
- Fluid: water, oil, gas (unfrozen) or saturated steam
- Ball seat: reinforced PTFE (Option*)
- O-ring: FKM (Option*)



Valve: TKE·TKSE
- Fluid: water, oil or gas (unfrozen)
- Ball seat: PTFE
- O-ring: FKM



*Specify these materials in your order for the P-T ratings covered by the graph shown above, except for 1 1/2" and 2". Standard materials are only available for these sizes.

Note:
- Serviceable ambient temperature depends on the design of actuators. Refer to the information given for each of actuators introduced in this catalog.
- Do NOT install UTGE with gland packing into a position where maintenance is not possible.

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 the simplification of piping systems as shown in Fig. 1.

KITZ Fig. TNE, TNVE, UTNE 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

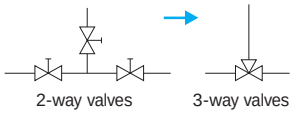
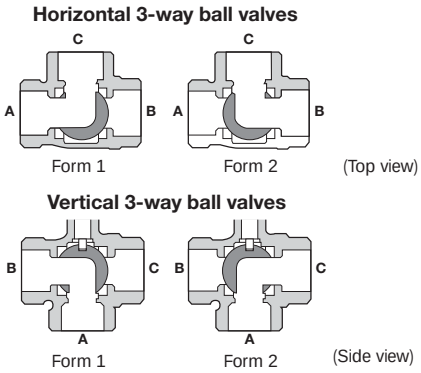


Fig. 2



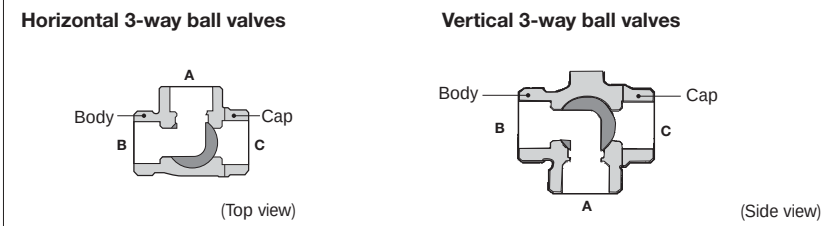
KITZ 3-way Compact Ball Valves: Flow Directional Form before Shipment

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

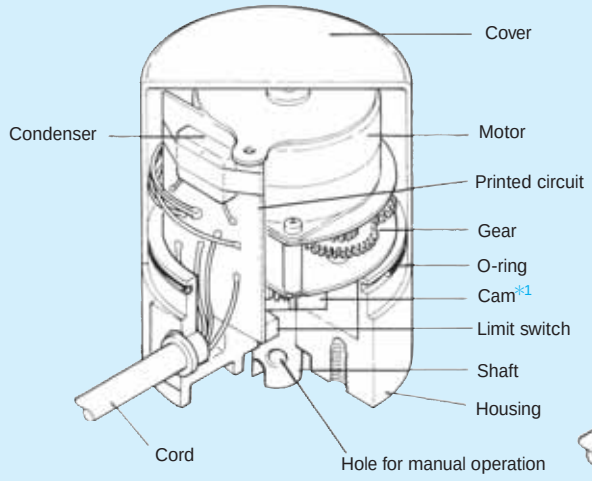
Location of cord connectors (top view):
The location of the cord connector for an actuator is also arranged as below:

Horizontal 3-way: Size 1 & 1.5: Right hand side
Size 2: Diagonally forward right
Vertical 3-way: Size 1: Right hand side
Size 2: Diagonally forward left

Fig. 3

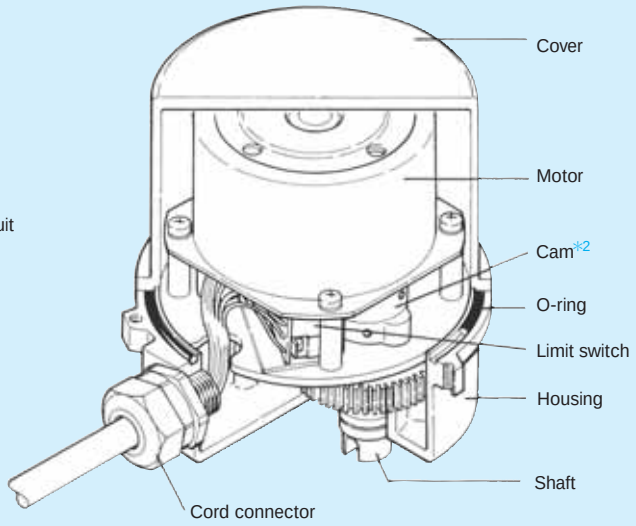


KITZ KELMO® Electric Actuators



Type EA100/200 Size 1 & 1.5

*1 Different cam design for Type EAH100/200-1



Type EA100/200 Size 2

*2 Different cam design for Type EAH100/200-2

General design features

- Compact size and light weight with die-cast aluminum 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, and restricted flow direction.
- All-weather-type design for outdoor service. (Avoid exposure to direct sunlight)
- 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.

Compact KELMO® actuators: power sources and functional features

Type of actuator		* Power source	Functional features
EA Series	EA100/EA200	100/200 V AC (50/60 Hz)	90 °bidirectional rotation
	EAB100/EAB200		90 °bidirectional rotation/Terminal box
	EAL100/EAL200		90 °bidirectional rotation/Built-in relay
	EALB100/EALB200		90 °bidirectional rotation/Built-in relay/Terminal box
	EAH100/EAH200		180 °bidirectional rotation
	EAHB100/EAHB200		180 °bidirectional rotation/Terminal box
EC Series	EC100/EC200	100/200 V AC (50/60 Hz)	90 °Unidirectional rotation
EAE Series	EAE100/EAE200	100/200 V AC (50/60 Hz)	90 °bidirectional rotation/Spring-return
ED Series	ED12/ED24	12/24 V DC	90 °bidirectional rotation/Parallel drive
ES Series	ESA100/ESA200	100/200 V AC (50/60 Hz)	90 °bidirectional rotation

* Optional Specification (EA Series)

AC110 V (50/60 Hz)
AC115 V* (50/60 Hz)
AC120 V (50/60 Hz)
AC230 V* (50/60 Hz)
AC240 V (50/60 Hz)

*EA100/200-1 only

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

100/200 V AC 50/60 Hz

■ ***90° bidirectional rotation***

■ ***Factory assembled terminal box for easier installation of actuators (EAB)***

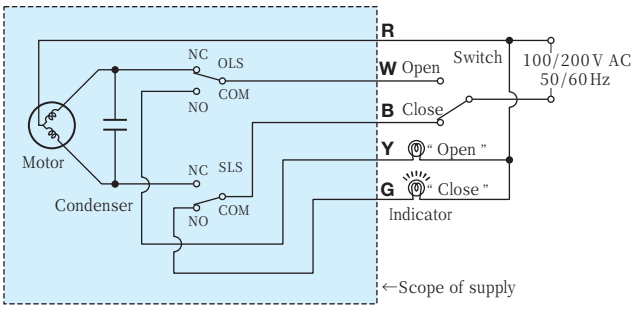
Type EA and EAB actuator design specifications

Specification \ Type		EA100-1 EAB100-1	EA200-1 EAB200-1	EA100-1.5 EAB100-1.5	EA200-1.5 EAB200-1.5	EA100-2 EAB100-2	EA200-2 EAB200-2
Power source 50/60 Hz		100 V AC±10%	200 V AC±10%	100 V AC±10%	200 V AC±10%	100 V AC±10%	200 V AC±10%
Rated current		90 mA	50 mA	90 mA	50 mA	100 mA	50 mA
Max. power consumption		9 W	10 W	9 W	10 W	10 W	
Valve closing time 90°	50 Hz	Approx. 6 s		Approx. 12 s		Approx. 15 s	
	60 Hz	Approx. 5 s		Approx. 10 s		Approx. 13 s	
Max. output torque		1.9 N·m		3.9 N·m		9.8 N·m	
Rated time		Continuous					
Insulation class		JIS Class E					
Sensitive switch contact capacity		125 V AC 2A (Resistance load) 250 V AC 0.6A (Resistance load)				125 V AC 2A (Resistance load) 250 V AC 2A (Resistance load)	
Position limit switch		One unit each for opening/closing (using the same power source as that of the actuator)					
Insulation strength		1500 V AC (1 min. interval)					
Insulation resistance		Minimum 10 MΩ (500 V DC)					
Standard protection		All weather type (for outdoor use, avoid exposure to direct sunlight) IP56 (IEC60529)					
Ambient temperature		−20°C to +50°C					
Mounting position		Vertical to horizontal					
Wiring		Vinyl cabtyre cord with five cores, 700 mm in length					
		0.3 mm^2				0.5 mm^2	
Lubrication		Grease					
Overload protection		Impedance protection					
Coating color		Housing: black Cover: light blue					

Note: Contact KITZ for technical advice when the service conditions differ from the above.

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

EA100/200 Size 1 to 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)

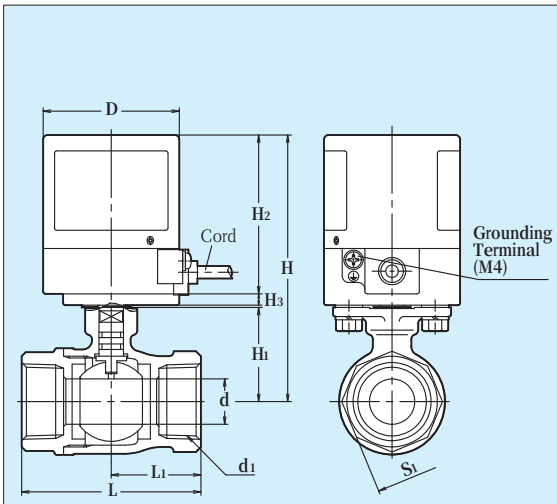
Note: For all sizes of Type EAB100/200, the terminals are numbered 1, 2, 3, 4 and 5 in place of R, W, B, Y and G, respectively.

Note:
- When two or more actuators are operated by a single switch, ensure to prevent unintended current flow by using relay contacts.
- Auxiliary devices, such as lamps or relays, where minute current is used, may cause failure in the contacts of limit switches. Consult KITZ for such applications.

Type EA Electric Actuators/Class 10K Bronze Ball Valves

Fig. EA100/200-TE

Actuator size: 1 and 1.5
Valve size: 3/8" to 1" (Standard bore)



Valve material

Parts	Materials
Body	CAC406
Body cap	C3771
Stem	C6782BD*1
Ball	C3531*2
Ball seat	PTFE
O-ring	FKM

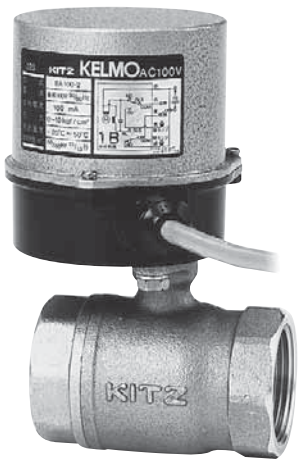
*1 Cr plated
*2 Ni-Cr plated

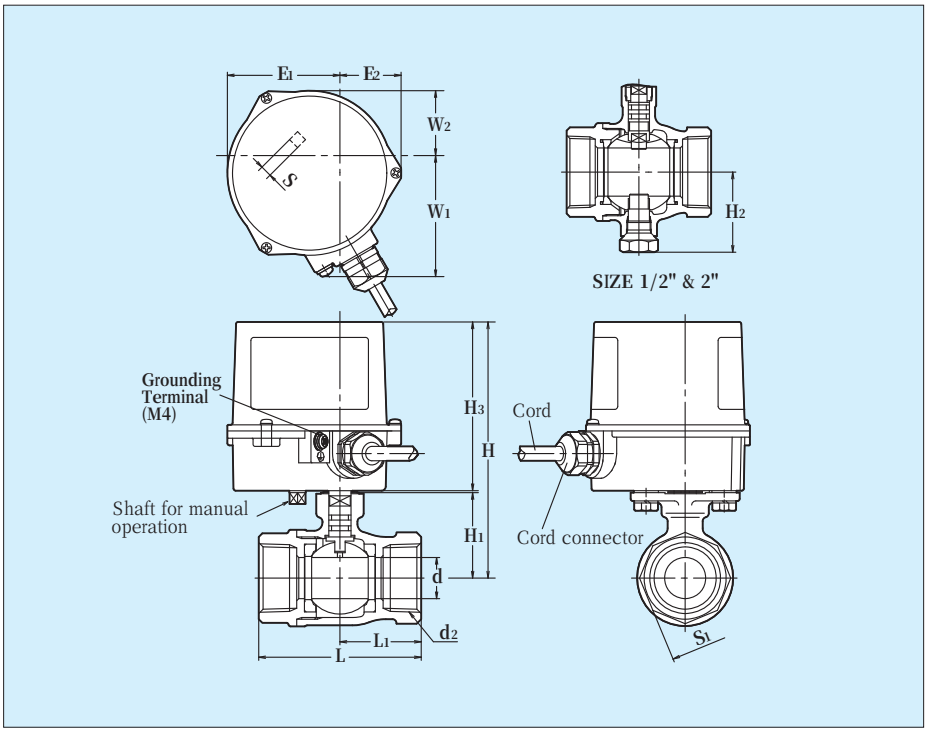
Dimensions (mm)

Valve Size (inch)	d	d1	H	H1	L	L1	S1	Actuator			
								H2	H3	D	Type
3/8	7.5	Rc3/8	104	28	46	22	22	70	5	60	EA100/200-1
1/2	10	Rc1/2	109.5	33.5	65	32.5	28				
3/4	15	Rc3/4	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)





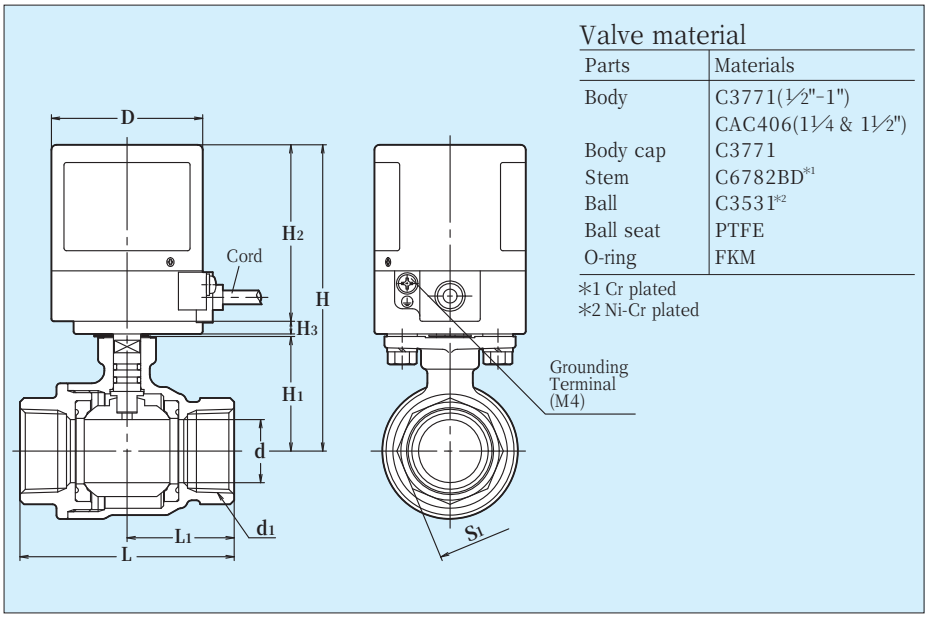
Dimensions (mm)

Valve Size (inch)	d	d1	H	H1	H2	L	L1	S1	Actuator						
									H3	E1	E2	W1	W2	S	Type
1¼	25	Rc1¼	128.5	45.5	—	86	43	50	82	54.5	30	59	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	Materials
Body	C3771(½"-1") CAC406(1¼ & 1½")
Body cap	C3771
Stem	C6782BD*1
Ball	C3531*2
Ball seat	PTFE
O-ring	FKM

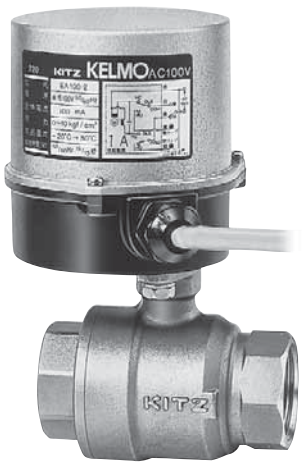
*1 Cr plated
*2 Ni-Cr plated

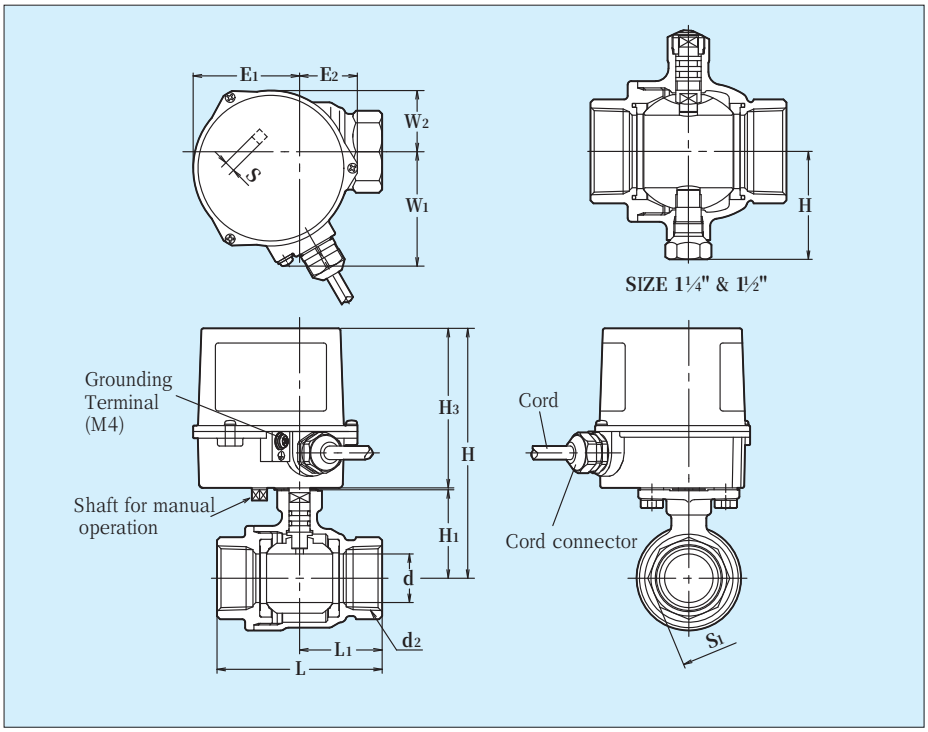
Dimensions (mm)

Valve Size (inch)	d	d1	H	H1	L	L1	S1	Actuator			
								H2	H3	D	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)





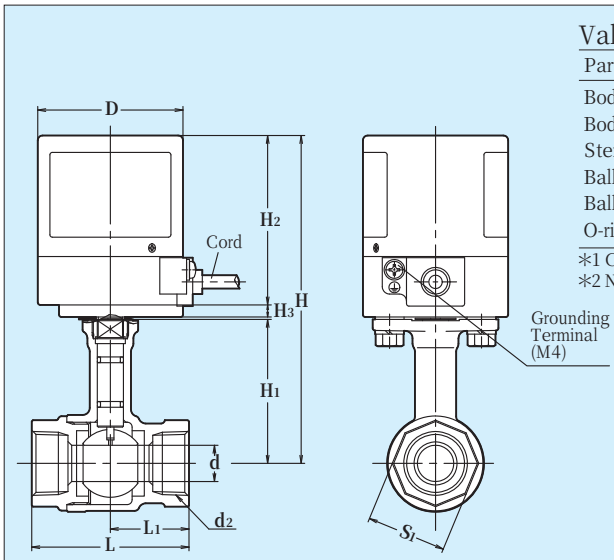
Dimensions (mm)

Valve Size (inch)	d	d1	H	H1	H2	L	L1	S1	Actuator						
									H3	E1	E2	W1	W2	S	Type
1	25	Rc1	128.5	45.5	—	85	42.5	39	82	54.5	30	59	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	Materials
Body	CAC406
Body cap	CAC406
Stem	C6782BD*1
Ball	C3531*2
Ball seat	PTFE
O-ring	FKM

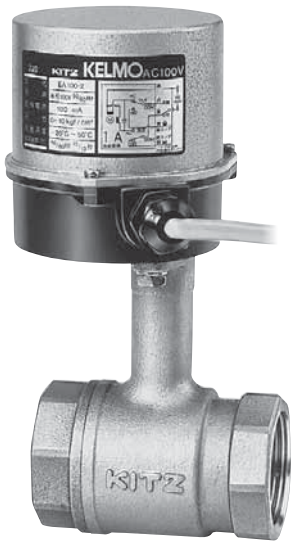
*1 Cr plated
*2 Ni-Cr plated

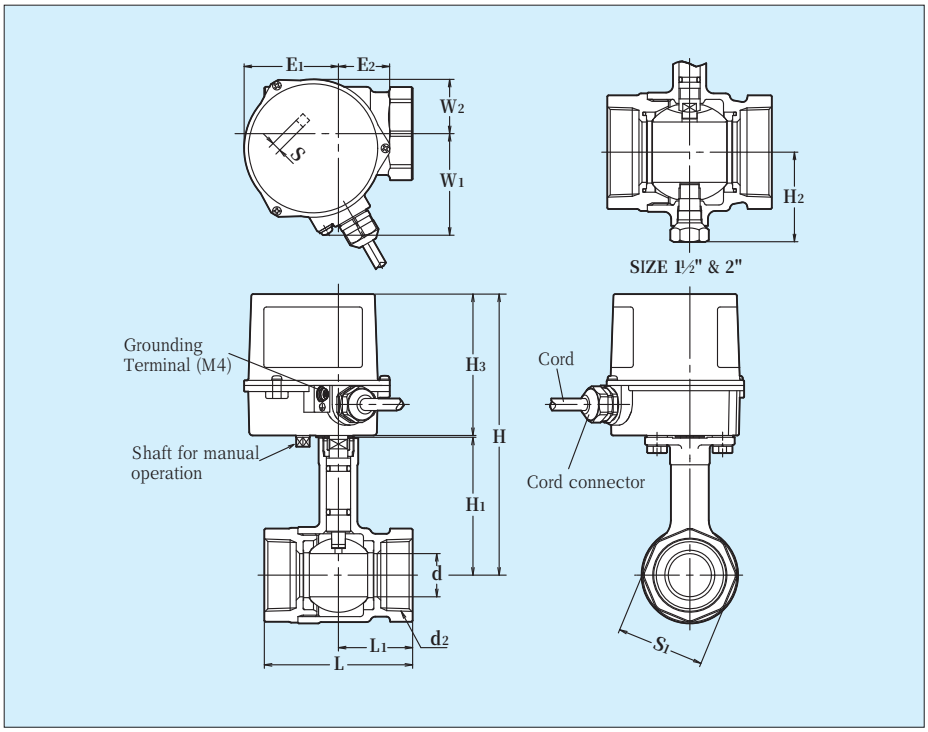
Dimensions (mm)

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)





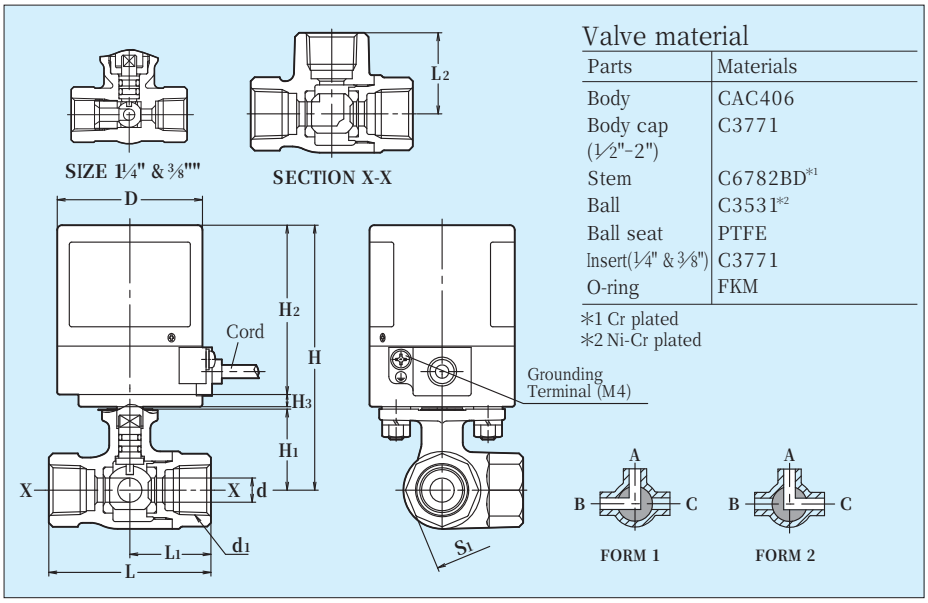
Dimensions (mm)

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	30	59	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: ½" to 1" (Standard bore)



Valve material

Parts	Materials
Body	CAC406
Body cap (½"-2")	C3771
Stem	C6782BD*1
Ball	C3531*2
Ball seat	PTFE
Insert(¼" & ⅜")	C3771
O-ring	FKM

*1 Cr plated
*2 Ni-Cr plated

*Stainless steel body available Fig. EA100/200-UTNE

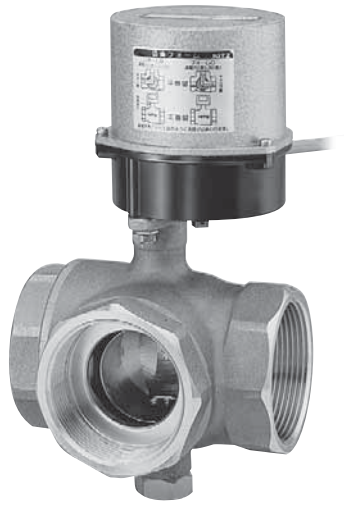
Note: Refer to Page 3 for the flow directional forms.
Products are adequately identified with nameplates indicating Form 1 as Form B or Form 2 as Form C.

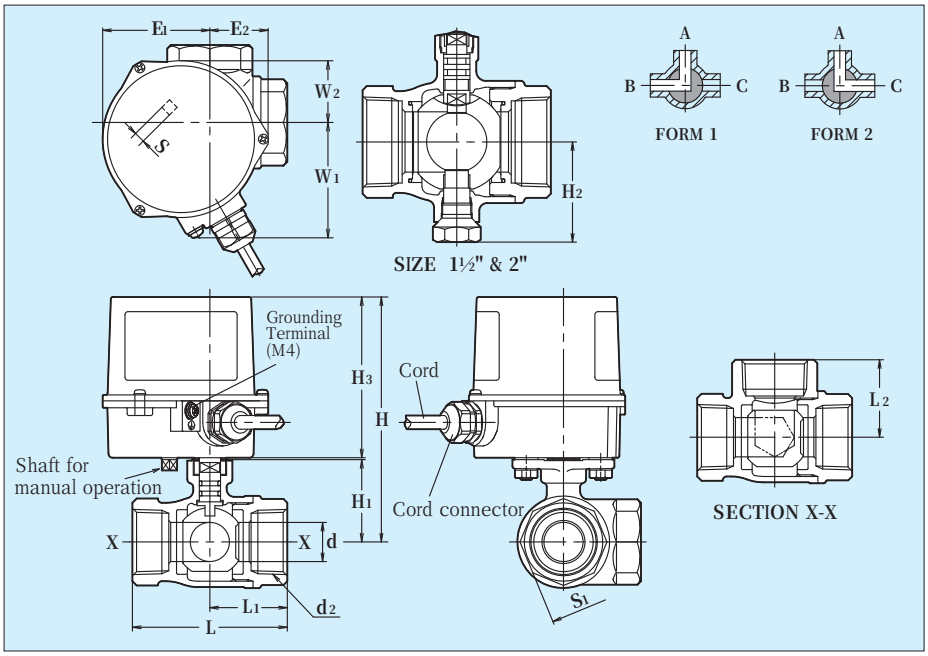
Dimensions (mm)

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	22	22	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)





*Stainless steel body available Fig. EA100/200-UTNE

Note: Refer to Page 3 for the flow directional forms.
Products are adequately identified with nameplates indicating Form 1 as Form B or Form 2 as Form C.

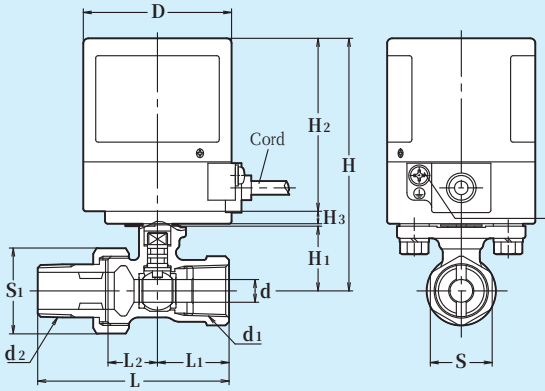
Dimensions (mm)

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	128.5	46.5	—	89	44.5	44.5	50	82	54.5	30	59	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 Union Nipple Bronze Ball Valves

Fig. **EA100/200-TUE**

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



Valve material

Parts	Materials
Body	CAC406
Stem	C6782BD*1
Ball	C3531*2
Ball seat	PTFE
Insert	C3771
O-ring	FKM
Gasket	G/F+PTFE
Union nipple	C3771

*1 Cr plated
*2 Ni-Cr plated

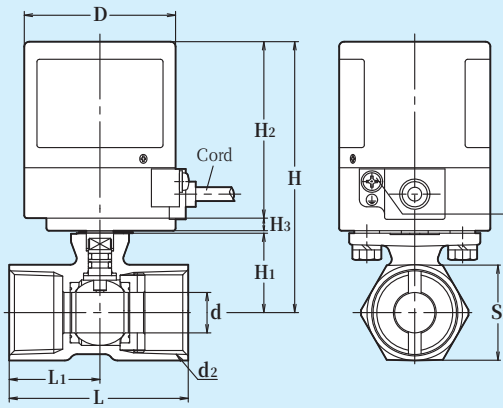
Dimensions (mm)

Valve Size (inch)	d	d1	d2	H	H1	L	L1	L2	S	S1	Actuator			
											H2	H3	D	Type
½	8	Rc½	Rc½	102	26	78.5	29	20	25	31	70	5	60	EA100/200-1
¾	11	Rc¾	Rc¾	104.5	28.5	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	Materials
Body	SCS14A
Stem	SUS316+Cr plated
Ball	SUS316
Ball seat	PTFE
Insert	SCS14A*
O-ring	FKM

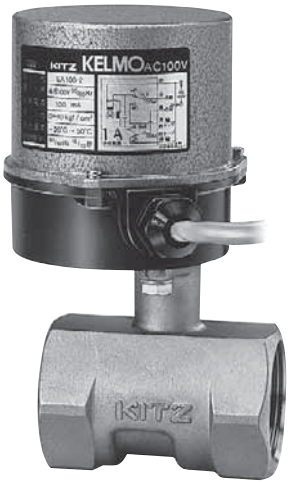
* SUS316 (¼" to ½")

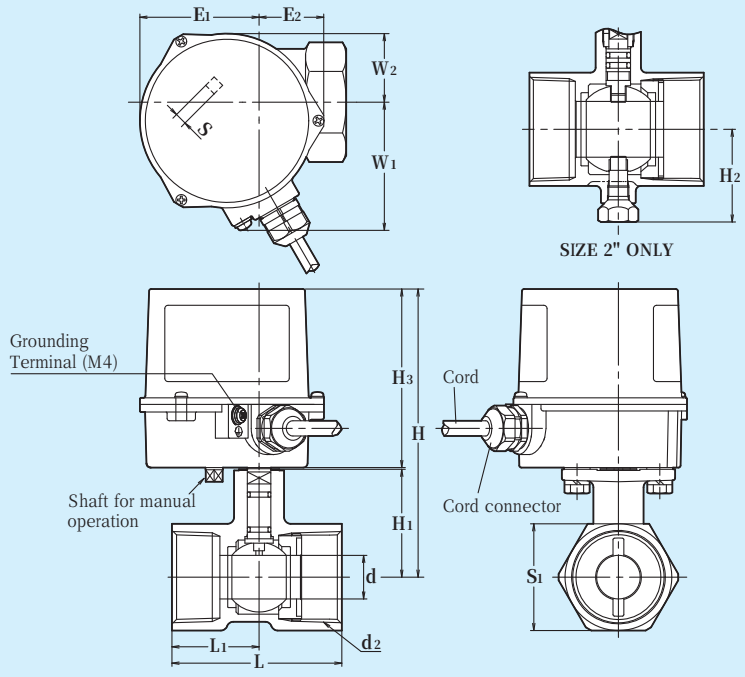
Dimensions (mm)

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)





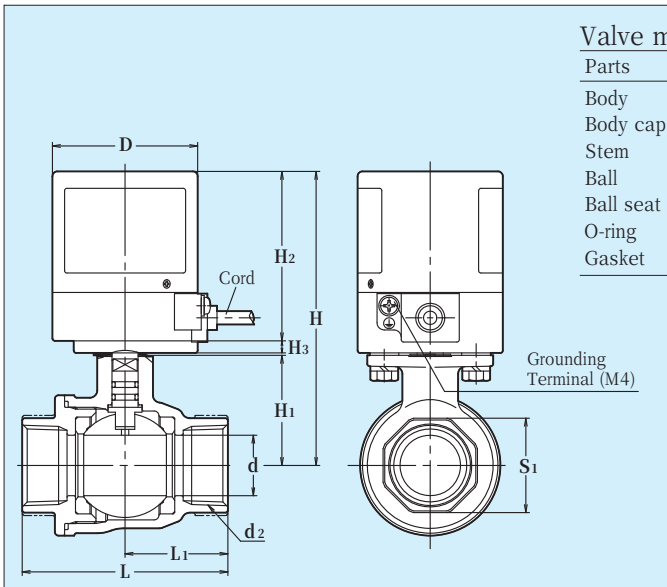
Dimensions (mm)

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	30	59	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

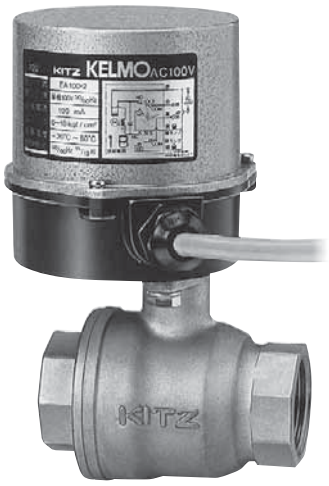
Parts	Materials
Body	SCS14A
Body cap	SCS14A
Stem	SUS316+Cr plated
Ball	SUS316
Ball seat	PTFE
O-ring	FKM
Gasket	PTFE

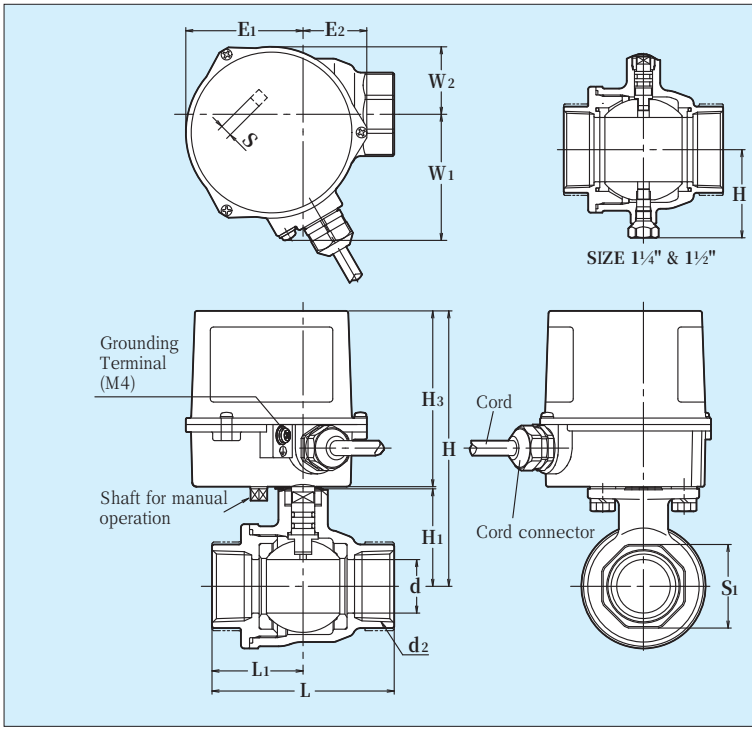
Dimensions (mm)

Valve Size (inch)	d	d1	H	H1	L	L1	S1	Actuator			
								H2	H3	D	Type
½	15	Rc½	113.5	37.5	63	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)





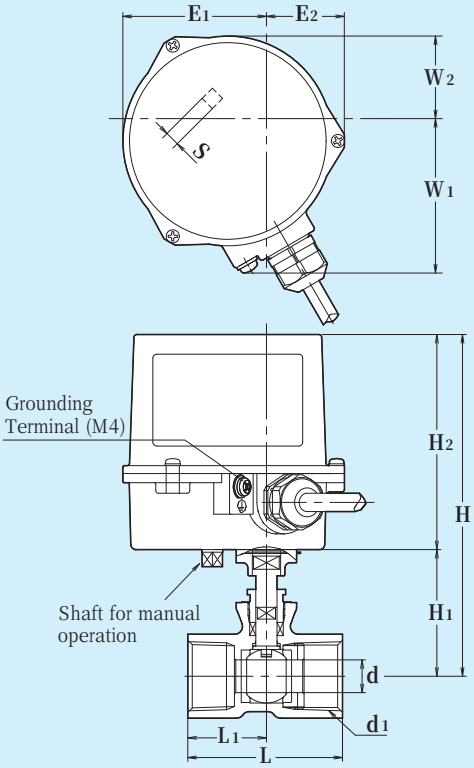
Dimensions (mm)

Valve Size (inch)	d	d1	H	H1	H2	L	L1	S1	Actuator						
									H3	E1	E2	W1	W2	S	Type
1	25	Rc1	128.5	45.5	—	85	42.5	39	82	54.5	30	59	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**

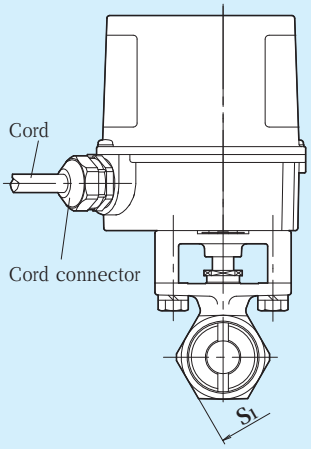
Actuator size: 2
Valve size: ¼" to 1" (Reduced bore)



Valve material

Parts	Materials
Body	SCS14A
Stem	SUS316+Cr plated
Ball	SUS316
Ball seat	Reinforced PTFE
Insert	SCS14A*
Gland packing	Flexible graphite +PTFE braided packing

* SUS316 (¼" to ½")



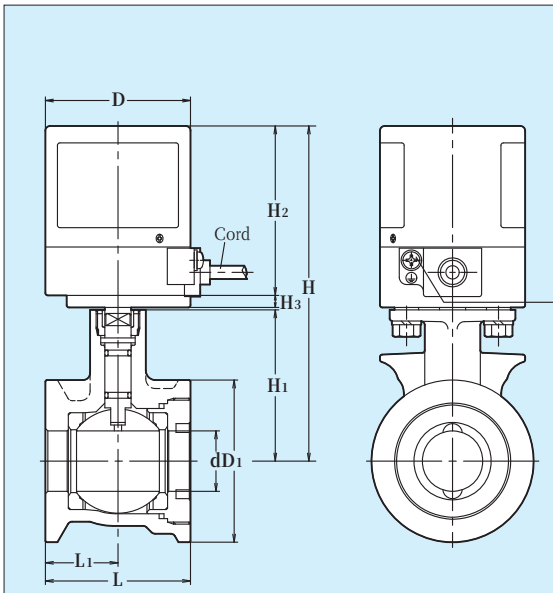
Dimensions (mm)

Valve Size (inch)	d	d1	H	H1	L	L1	S1	Actuator						
								H2	E1	E2	W1	W2	S	Type
¼	4.5	Rc¼	128	46	44	21	21	82	54.5	30	59	31.5	5.5	EA100/200-2
⅜	6.8	Rc⅜	128	46	44	21	21							
½	9.2	Rc½	128	46	56.5	27.5	25							
¾	12.5	Rc¾	131	49	59	30	32							
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: 3/8" to 3/4" (Full bore)



Valve material

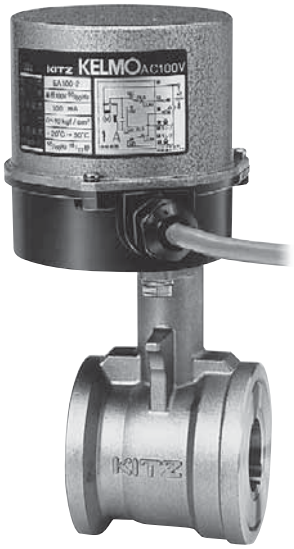
Parts	Materials
Body	SCS13A
Stem	SUS304+Cr plated
Ball	SUS304
Ball seat	PTFE
Insert	SUS304
O-ring	FKM

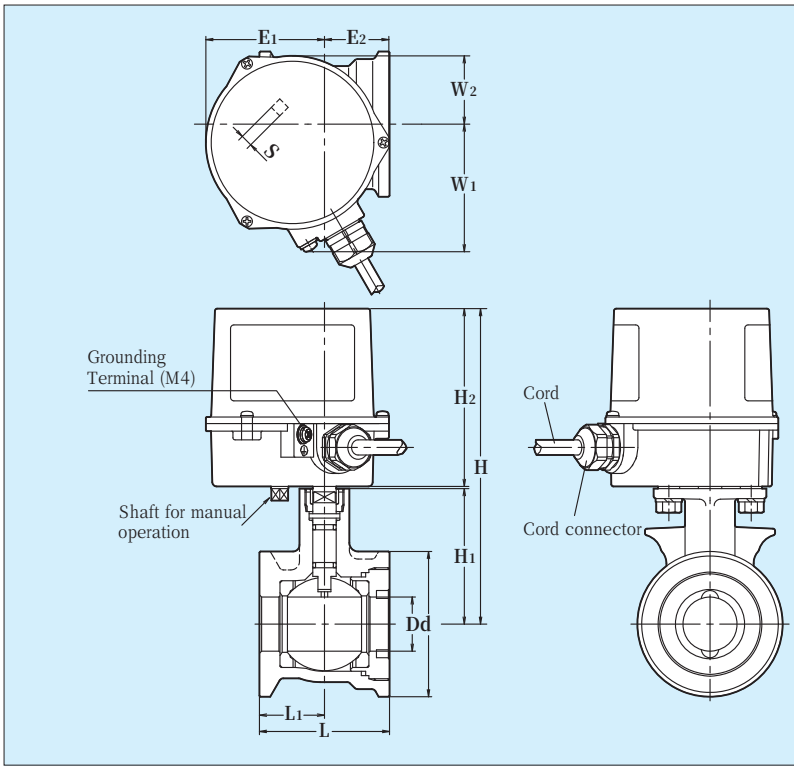
Dimensions (mm)

Valve Size (inch)	d	H	H1	L	L1	D1		Actuator			
						5K	10K	H2	H3	D	Type
3/8	10	131	55	35	17.5	43	48	70	5	60	EA100/200-1
1/2	15	134	58	40	20	48	53				EA100/200-1.5
3/4	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	30	59	31.5	5.5	EA100/200-2

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

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

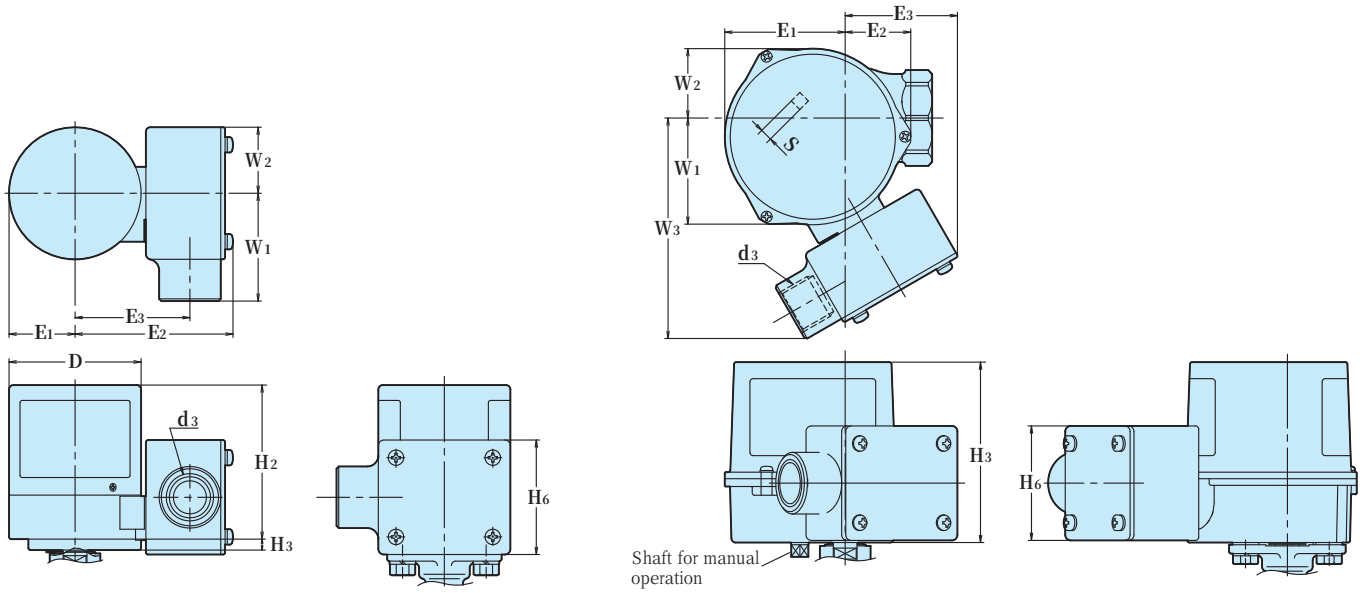
Refer to Page 5.

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-TUE

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
G1/2	70	5	52	30	72	52	49	30	60

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

Dimensions of actuator size 2 (mm)

d3	H3	H6	E1	E2	E3	W1	W2	W3	S
G1/2	82	52	54.5	30	52	49	31.5	100	5.5

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

Type EAL and EALB Electric Actuators/Class 10K Bronze or Stainless Steel Ball Valves

100/200V AC 50/60Hz

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

Type EAL and EALB actuator design specifications

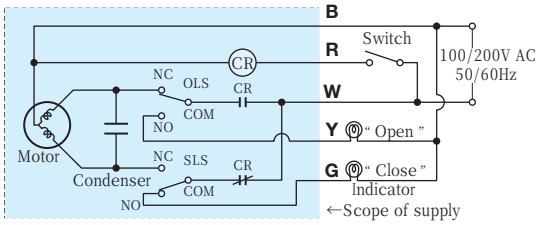
Specification \ Type		EAL100-1 EALB100-1	EAL200-1 EALB200-1	EAL100-1.5 EALB100-1.5	EAL200-1.5 EALB200-1.5	EAL100-2 EALB100-2	EAL200-2 EALB200-2
Power source 50/60Hz		100V AC	200V AC	100V AC	200V AC	100V AC	200V AC
Rated current		100mA	60mA	100mA	60mA	110mA	60mA
Max. power consumption		10W	12W	10W	12W	11W	12W
Valve closing time 90°	50Hz	Approx. 6 s		Approx.12 s		Approx.15 s	
	60Hz	Approx. 5 s		Approx.10 s		Approx.13 s	
Max. output torque		1.9N·m		3.9N·m		9.8N·m	
Rated time		Continuous					
Insulation Class		JIS Class E					
Sensitive switch contact capacity		125V AC 2A, 250V AC 0.6A (Resistance load)				250V AC 2A (Resistance load)	
Position limit switch		One unit each for opening/closing (using the same power source as that of the actuator)					
Insulation strength		1500V AC (1 min. interval)					
Insulation resistance		Minimum 10MΩ (500V DC)					
Standard protection		All weather type (for outdoor use, avoid exposure to direct sunlight)					
Ambient temperature		−20°C to +50°C					
Mounting position		Vertical to horizontal					
Wiring		Vinyl cabtyre cord with five cores, 700mm in length					
		0.3mm²				0.5mm²	
Lubrication		Grease					
Overload protection		Impedance protection					
Coating color		Housing: black Cover: light blue					

∗ Terminals (M3) are used to connect EALB with the power source.

Type EAL actuator circuit diagrams

(with the valve fully closed)

EAL100/200 Size 1, 2

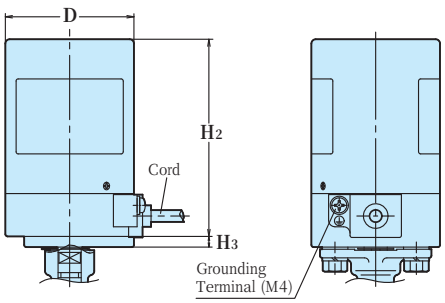


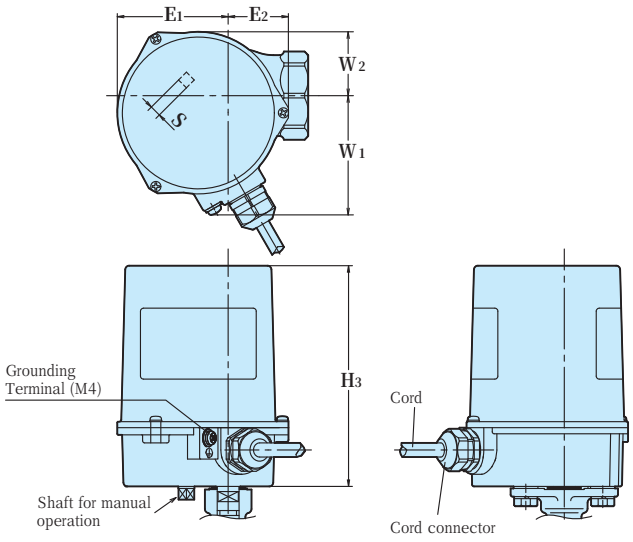
- Wire color: **B** black **R** red **W** white **Y** yellow **G** green
- Actuator rotates:
  Switch ON: Counter-clockwise to fully open the valve
  Switch OFF: Clockwise to fully close the valve
- Limit switches activate:
  OLS: on fully opening the valve (B-W: off W-Y: on)
  SLS: on fully closing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

Note: For all sizes of Type EALB100/200, 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

EAL100/200-TE EAL100/200-UTE
EAL100/200-TFE EAL100/200-UTFE
EAL100/200-TLE EAL100/200-UTGE
EAL100/200-TNE EAL100/200-5/10UTWE
EAL100/200-TUE EAL100/200-UTNE





Dimensions of actuator size 1 & 1.5 (mm)

H2	H3	D
92	5	60

Dimensions of actuator size 2 (mm)

H3	E1	E2	W1	W2	S
108.5	54.5	30	59	31.5	5.5

Note: Refer to Page 17 for actuator sizing for ball valves.

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

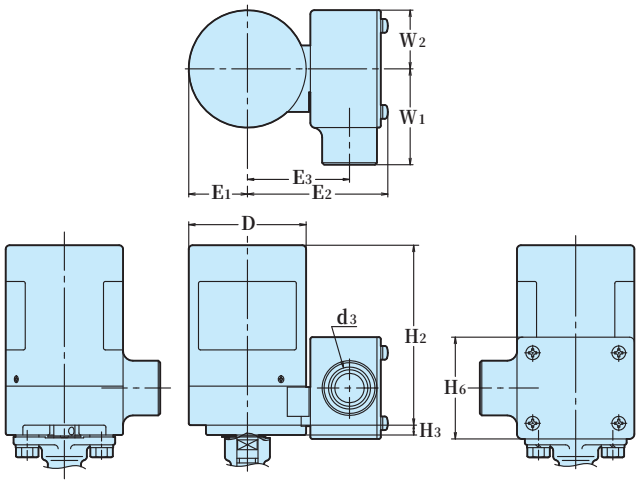
The circuit diagram is the same as the one for Type EAL actuators.

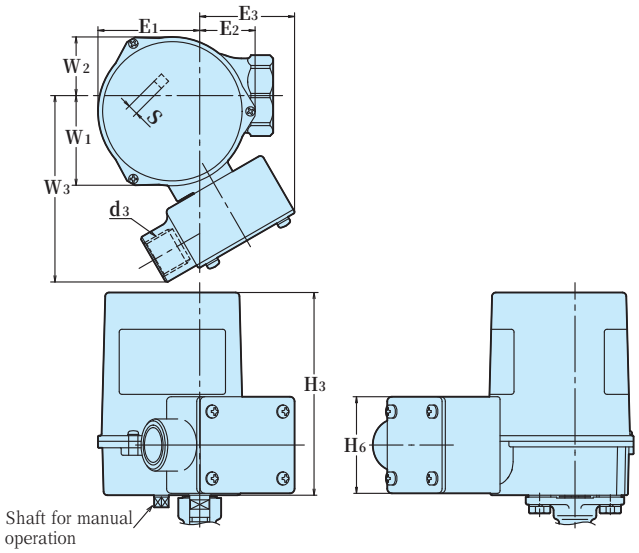
Refer to Page 16

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

Fig. of actuator-to-valve assemblies

EALB100/200-TE EALB100/200-UTE EALB100/200-VTS
EALB100/200-TFE EALB100/200-UTFE EALB100/200-10VT
EALB100/200-TLE EALB100/200-UTGE EALB100/200-UTNE
EALB100/200-TNE EALB100/200-5/10UTWE
EALB100/200-TUE EALB100/200-VT





Dimensions of actuator size 1 & 1.5 (mm)

d3	H2	H3	H6	E1	E2	E3	W1	W2	D
G1/2	92	5	52	30	72	52	49	30	60

Dimensions of actuator size 2 (mm)

d3	H3	H6	E1	E2	E3	W1	W2	W3	S
G1/2	108.5	52	54.5	30	52	49	31.5	100	5.5

Actuator sizing table (EAL·EALB Type)

Fig \ Size	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
TE		Size-1		Size-1.5		Size-2		
TFE			Size-1.5		Size-2			
TLE			Size-1	Size-1.5		Size-2		
TNE	Size-1							
TUE			Size-1					
UTE	Size-1				Size-1.5	Size-2		
UTFE			Size-1.5		Size-2			
UTGE	Size-2							
5/10UTWE		Size-1	Size-1.5		Size-2			
VT, VTS, 10VT			Size-2					

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

100/200 V AC 50/60 Hz

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

Type EAH and EAHB actuator design specifications

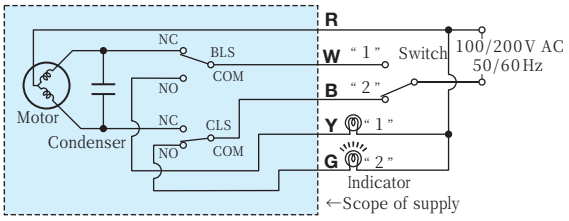
Specification \ Type		EAH100-1 EAHB100-1	EAH200-1 EAHB200-1	EAH100-1.5 EAHB100-1.5	EAH200-1.5 EAHB200-1.5	EAH100-2 EAHB100-2	EAH200-2 EAHB200-2
Power source 50/60 Hz		100 V AC	200 V AC	100 V AC	200 V AC	100 V AC	200 V AC
Rated current		90 mA	50 mA	90 mA	50 mA	100 mA	50 mA
Max. power consumption		9 W	10 W	9 W	10 W	10 W	
Valve closing time 90 °	50 Hz	Approx. 12 s		Approx. 24 s		Approx. 30 s	
	60 Hz	Approx. 10 s		Approx. 20 s		Approx. 26 s	
Max. output torque		1.9 N・m		3.9 N・m		9.8 N・m	
Rated time		Continuous					
Insulation class		JIS Class E					
Sensitive switch contact capacity		125 V AC 2 A, 250 V AC 0.6 A (Resistance load)				250 V AC 2 A (Resistance load)	
Position limit switch		One unit each for opening/closing (using the same power source as that of the actuator)					
Insulation strength		1500 V AC (1 min. interval)					
Insulation resistance		Minimum 10 MΩ (500 V DC)					
Standard protection		All weather type (for outdoor use, avoid exposure to direct sunlight)					
Ambient temperature		−20℃ to +50℃					
Mounting position		Vertical to horizontal					
Wiring		Vinyl cabtyre cord with five cores, 700 mm in length					
		0.3 mm^2				0.5 mm^2	
Lubrication		Grease					
Overload protection		Impedance protection					
Coating color		Housing: black Cover: light blue					

＊Terminals (M3) are used to connect EAHB with the power source.

Type EAH actuator circuit diagrams

(with the valve positioned at Form 2)

EAH100/200



- 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 EAHB100/200, the terminals are numbered 1, 2, 3, 4 and 5 in place of R, W, B, Y and G respectively.

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

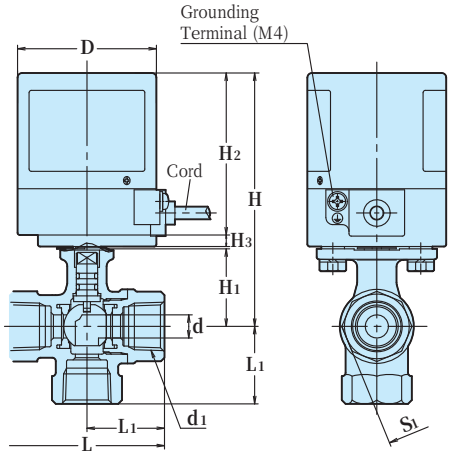
Fig. EAH100/200-TNVE

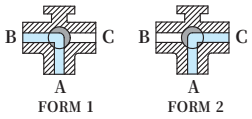
Actuator size: 1 & 1.5
Valve size: ½" to 1" (Standard bore)

Valve material

Parts	Materials
Body	CAC406
Body cap	C3771
Stem	C6782BD*1
Ball	C3531*2
Ball seat	PTFE
O-ring	FKM

*1 Cr plated
*2 Ni-Cr plated

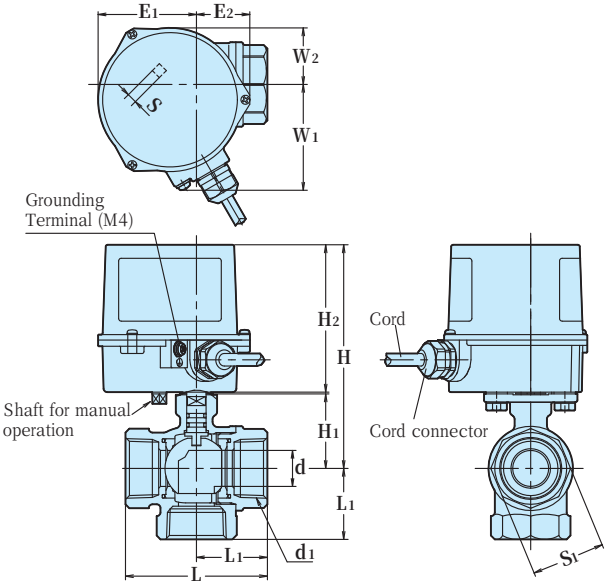




Viewed from valve side (" KITZ " mark)
Note: Refer to page 3 for flow direction. Products are adequately identified with nameplates indicating Form 1 as Form B or Form 2 as Form C.

Fig. EAH100/200-TNVE

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



Dimensions of actuator size 1 & 1.5 (mm)

Valve Size (inch)	d	d1	H	H1	L	L1	Actuator H2	Actuator H3	Actuator D	Actuator Type
½	10	Rc½	109.5	33.5	67	33.5	70	5	60	EAH100/200-1
¾	15	Rc¾	113.5	37.5	68	34.0				EAH100/200-1.5
1	20	Rc1	117.5	41.5	79	39.5				

Dimensions of actuator size 2 (mm)

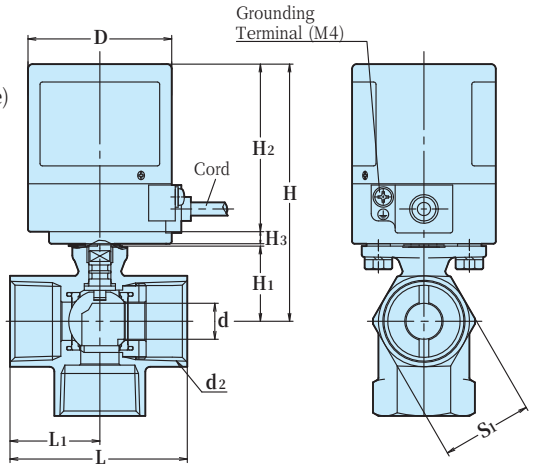
Valve Size (inch)	d	d1	H	H1	L	L1	S1	Actuator H2	Actuator E1	Actuator E2	Actuator W1	Actuator W2	Actuator S	Actuator Type
1¼	25	Rc1¼	129.5	46.5	89	44.5	50	82	54.5	30	59	31.5	5.5	EAH100/200-2

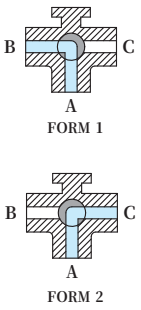
Note: Contact KITZ for technical advice when valve operation at an intermediate position is required

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

Fig. EAH100/200-UTVE

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





Valve material

Parts	Materials
Body	SCS14A
Stem	SUS316+Cr plated
Ball	SUS316
Ball seat	PTFE
Insert	SUS316
O-ring	FKM

Viewed from valve side (" KITZ " mark)
Note: Refer to page 3 for flow direction. Products are adequately identified with nameplates indicating Form 1 as Form B or Form 2 as Form C.

Dimensions (mm)

Valve Size (inch)	d	d1	H	H1	L	L1	S1	Actuator H2	Actuator H3	Actuator D	Actuator Type
¼	4.5	Rc¼	101.5	25.5	44.0	21.0	21	70	5	60	EAH100/200-1
⅜	6.8	Rc⅜	101.5	25.5	44.0	21.0	21				
½	8.5	Rc½	102.0	26.0	58.0	29.0	25				
¾	11.5	Rc¾	104.5	28.5	61.5	31.5	32				
1	15.0	Rc1	107.5	31.5	74.0	37.5	38				EAH100/200-1.5

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

Type EAHB Electric Actuators/Class 10K Vertical 3-way Bronze or Stainless Steel Ball Valves with Terminal Box

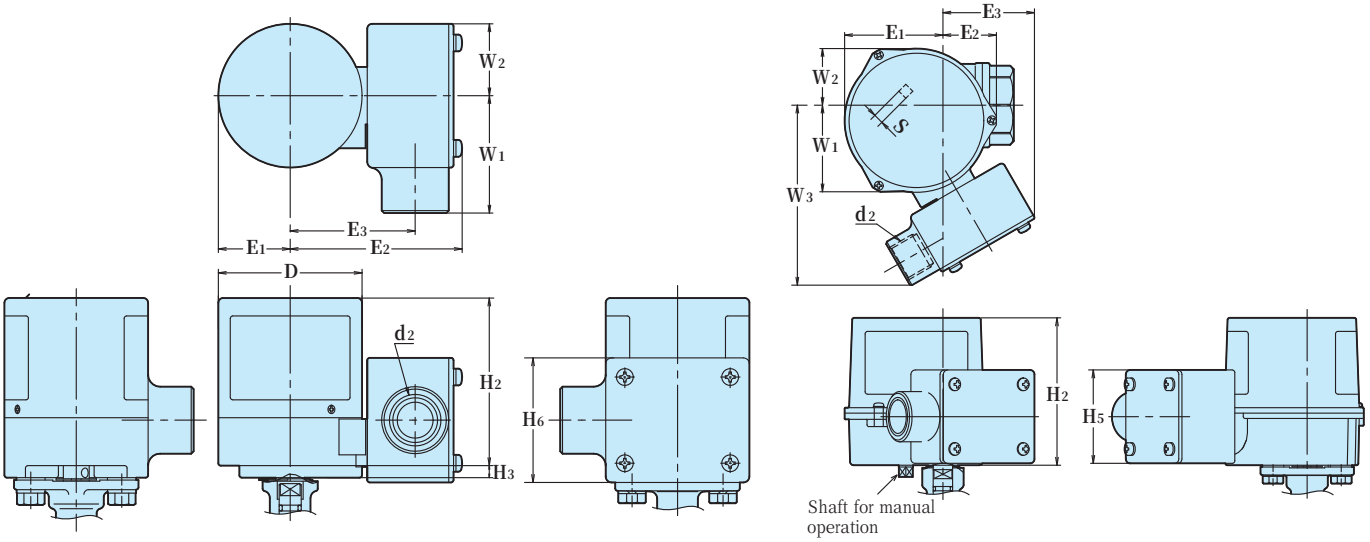
The circuit diagram is the same as the one for Type EAL actuators.

Refer to Page 18.

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

Fig. of actuator-to-valve assemblies

EAHB100/200-TNVE
EAHB100/200-UTVE



Dimensions of actuator size 1 & 1.5 (mm)

d2	H2	H3	H6	E1	E2	E3	W1	W2	D
G½	70	5	52	30	72	52	49	30	60

Dimensions of actuator size 2 (mm)

d2	H2	H5	E1	E2	E3	W1	W2	W3	S
G½	82	52	54.5	30	52	49	31.5	100	5.5

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

100/200 V AC 50/60 Hz

- ***Economy version of KITZ EA series-driven ball valves***
- ***Exclusive mounting KITZ TKE ball valves***
- ***90° or 180° unidirectional drive***
- ***Automated change of flow direction***
- ***Choice of three-way operations: two different flow passages and flow block without leakage***

Type EC actuator design specifications

Specification \ Type		EC100/200 ECR100/200
Power source 50/60 Hz		100/200 V AC
Rated current		50 mA/30 mA
Max. power consumption		About 4 W
Valve closing time 90 °/180 °	50 Hz	Approx. 4.5 sec.
	60 Hz	Approx. 3.8 sec.
Max. output torque		0.98 N·m
Rated time		Continuous
Insulation Class		JIS Class E
Sensitive switch contact capacity		200 V AC 1 A, (Resistance load)
Position limit switch		One unit each for opening/closing (Using the same power source as that of the actuator)
Insulation strength		1500 V AC (1 min. interval)
Insulation resistance		Minimum 10 MΩ (500 V DC)
Standard protection		All weather type (for outdoor use, avoid exposure to direct sunlight)
Ambient temperature		−10°C to +60°C
Mounting position		Vertical to horizontal
Wiring		Vinyl cabtyre cord with five cores 0.3 mm²(300 mm long)
Lubrication		Grease

Note: Refer to Pages 1 and 2 for design features, applications, and flow coefficient of ball valves.

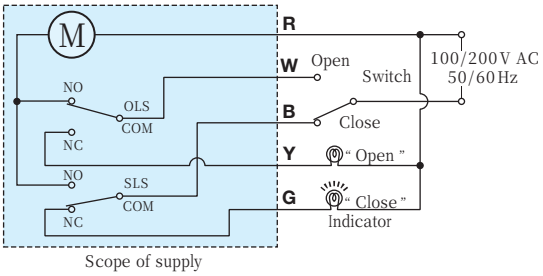
Valve design specifications

Threaded ends: JIS B 0203

Maximum service pressure
½" and smaller: 1.0 MPa
¾" and 1": 0.5 MPa

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 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: (1) When two or more actuators are operated by a single switch, ensure to prevent unintended current flows using relay contacts.
(2) Please note that when the switch is changed from "open" to "shut" or "shut" to "open" in the middle of operation, the actuator will reverse its movement after the completion of original direction. For example, the actuator will start to open the valve after completely shutting it or vice versa.

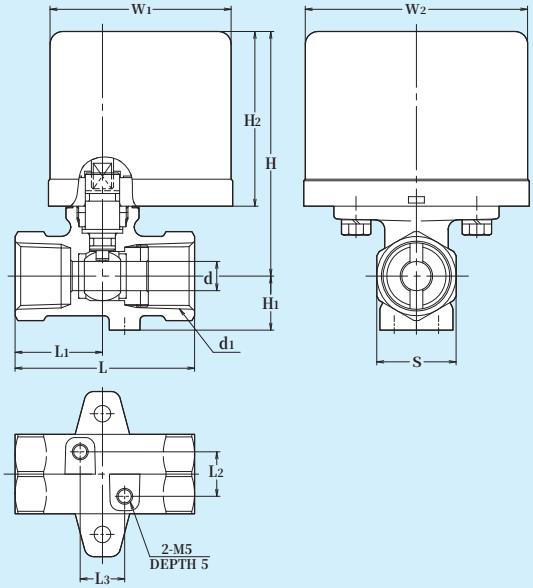
⚠ CAUTION

Actuator housings are made of polyacetal. Do NOT use these actuators in an atmosphere that contains corrosive gases such as chloride, and solvents such as trichloroethylene or methylene chloride.

Type EC Electric Actuators/Class 10K Brass Ball Valves

Fig. **EC100/200-TKE**

Valve size: ¼" to ¾"



Valve material

Parts	Materials
Body	C3771
Stem	C3531*2
Ball	C3531*1
Ball seat	PTFE
Insert	C3771
O-ring	FKM

*1 Ni-Cr plated
*2 Cr plated

Dimensions (mm)

Valve Size (inch)	d	d1	H	H1	L	L1	L2	L3	S	Actuator			
										H2	W1	W2	Type
¼	4.5	Rc¼	76.5	15	44	21	14	14	21	55	58	71	EC100/200-1
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				
¾	11	Rc¾	80	20	59	30	17	16	32				

KELMO® EAE Series Spring Electric Actuator

100/200V AC 50/60Hz

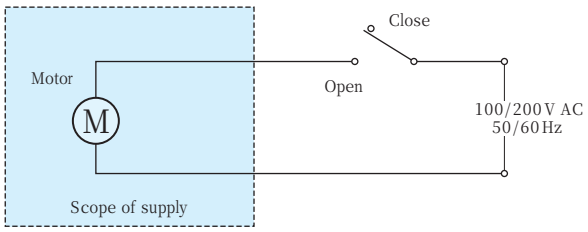
- ***Two-wire power supply system for easy replacement of conventional solenoid valves as a valve actuating device.***
- ***Modest operating speed with no concern of water hammer, which is a problem for conventional solenoid valves.***
- ***Availability of manual operation.***
- ***Auto-lock provision to hold valve opening position when the actuator is turned off.***

Type EAE actuator design specifications

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

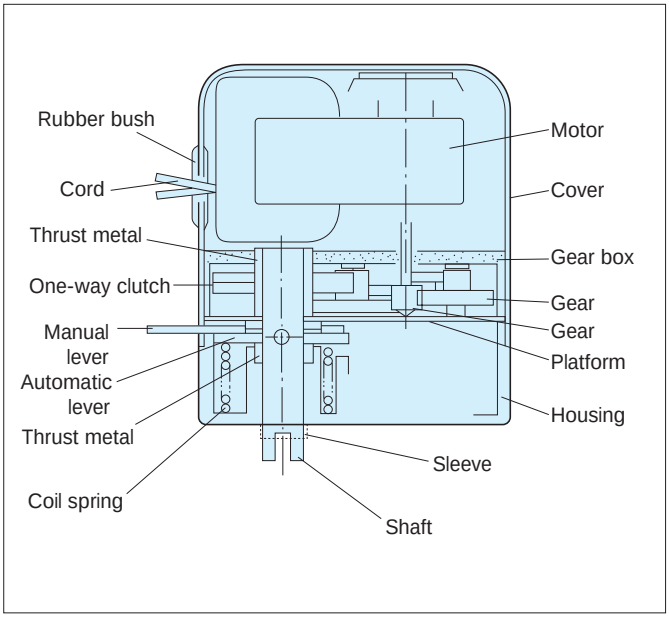
*The use in outdoor, such as the place where the actuator may get splashed or the place of high humidity, is prohibited.
Terminal boxes and cabtyre cables are available as an option.

Actuator circuit diagrams



Operating mechanism

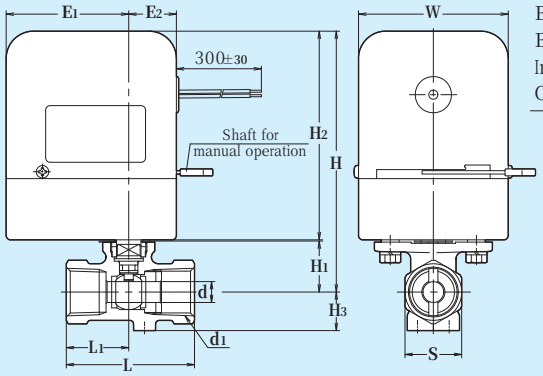
- The basic mechanical structure is given in the illustration below.
- Energizing an actuator rotates a motor and transfer the torque to a one-way clutch via reducing gears. The torque will be, then, transferred to the shaft and will open the valve, while winding up the core spring simultaneously.
- 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 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-TE (⅜" and ½")
EAE100/200-TNE* (¼" to ½")
EAE100/200-TUE (½")
EAE100/200-UTE (¼" to ½")
EAE100/200-TKSE*



The drawing shows EAE100/200-TKSE

Valve material

Parts	Materials
Body	C3771
Stem	C3531*2
Ball	C3531*1
Ball seat	PTFE
Insert	C3771
O-ring	FKM

*1 Ni-Cr plated
*2 Cr plated

Dimensions (mm)

Valve Size (inch)	d	d1	H	H1	H3	L	L1	S	Actuator				
									H2	E1	E2	W	Type
¼	5.3	Rc¼	114.5	21.5	15	44	21	21	92	21	54	66	EAE100/200-1
⅜	7.7	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 2 for valve design specifications and PTFE seat pressure-temperature ratings.

Note: ● Terminal box and cabtyre cables are available for option.
● EAE actuators are on-off actuators. Do NOT use them for partially opening or closing valves.

⚠ 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 where the actuators may get splashed.
- These actuators are designed only for on-off fluid control by means of full opening or closing of valves. Do NOT use them for partial opening or closing for intermediate valve positioning.
- Excessively high frequency of operation such as 20 cycles per hour may shorten service life of actuators. Application to air-conditioning or ventilation service may cause this problem.
- Do NOT use them for handling highly viscous fluids containing particles, dirt or sands.
- Actuator housings are made of PBT resin. To avoid damage, do NOT place any other heavy objects on actuators, or do NOT step on actuators.

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

12/24V DC

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

Type ED actuator design specifications

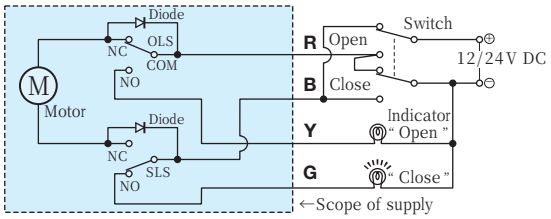
Specification \ Type	ED12-1	ED24-1	ED12-2	ED24-2
Power source 50/60 Hz	12 V DC	24 V DC	12 V DC	24 V DC
Rated current	360 mA	140 mA	520 mA	260 mA
Starting current	0.4 A	0.5 A	1.9 A	0.95 A
Max. power consumption	5 W	4 W	9 W	10 W
Valve closing time 90° 50 Hz	Approx. 5 sec.			
Max. output torque	1.4 N·m		7.3 N·m	
Rated time	5 min			
Insulation Class	JIS Class E			
Position limit switch	One unit each for opening/closing (Using the same power source as that of the actuator)			
Insulation strength	250 V DC (1 min. interval)		500 V DC (1 min. interval)	
Insulation resistance	Minimum 10 MΩ (250 V DC)			
Standard protection	All weather type (for outdoor use, avoid exposure to direct sunlight)			
Ambient temperature	−20°C to +50°C			
Mounting position	Vertical to horizontal			
Wiring	Vinyl cabtyre cord with five cores		UL approved noninflammable cord with five cores	
	0.3 mm²		0.5 mm²	
Lubrication	Grease			
Overload protection	Impedance protection		Thermal protection	
Coating color	Housing: black Cover: light blue			

Note: Type ED12-2 and ED24-2 are optionally available for mobile application. Do NOT spray high pressure water directly to Type ED actuator during car wash.

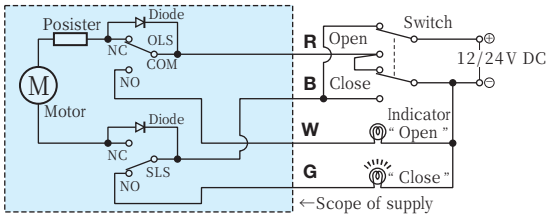
Type ED actuator circuit diagrams

(with the valve fully closed)

ED 12/24 Size 1



ED 12/24 Size 2



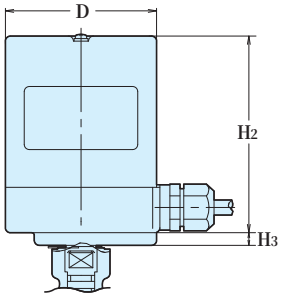
- Wire color: **R** red **W** white **B** black **Y** yellow **G** green
- Actuator rotates:
  R⊕ - **B**⊖: Counter-clockwise to fully open the valve
  R⊖ - **B**⊕: Clockwise to fully close the valve
- Limit switches activate:
  OLS: on fully opening the valve (R-B: off R-Y(W): on)
  SLS: on fully closing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

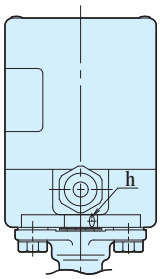
Actuator sizing table (ED Type)

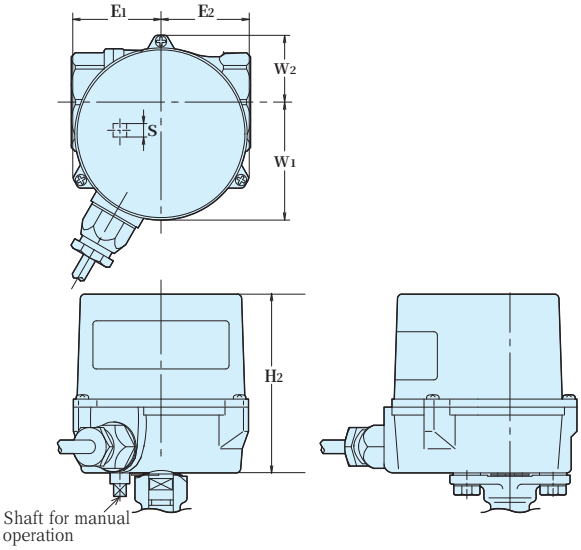
Fig \ Size	¼	⅜	½	¾	1	1¼	1½	2
TE		Size-1			Size-2			
TNE	Size-1				Size-2			
UTE	Size-1					Size-2		
UTFE			Size-1		Size-2			
UTGE	Size-2							
5/10UTWE		Size-2						

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 1 (mm)

H_2	H_3	D	h
78	5	60	4

Dimensions of actuator size 2 (mm)

H_2	E_1	E_2	W_1	W_2	S
79	39	39	52	30	5.5

Type ES Electric Actuators/Class 10K Brass or Stainless Steel Ball Valves

100/200V AC 50/60Hz

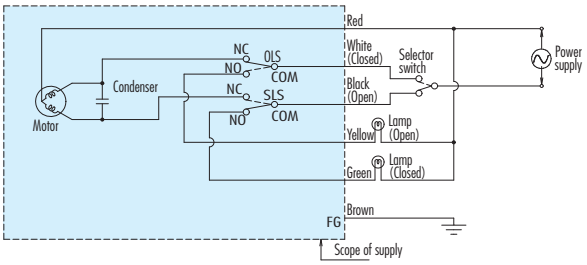
- ***Shock-resistant and tough polycarbonate (PC) is adopted to the actuator cover and the gear case to improve durability.***
- ***Dust-prevention and drip-proof construction compliant with IP65 ensure the installation in a severe environment. (Contact KITZ for submergence resistance.)***
- ***Easy separation of valve-actuator assemblies for replacement by hand even in a confined space.***
- ***Semi-translucent actuator cover allows easy viewing of the valve position indicator.***
- ***Downsizing of the product has been achieved by modifications to the layout of the actuator internal parts and the valve connecting structure.***
- ***This product can be installed to the arbitrary location of the intended device using the tapped holes for fixing at the bottom of the valve. Efficiency of piping work is significantly improved, and connection to nylon tubing is easily done.***

Type ES actuator design specifications

Specification \ Type		ESA100-1	ESA200-1
Operation		ON-OFF (Fully open ⇔ Fully closed)	
Power source (single phase) 50/60Hz		100V AC±10%	200V AC±10%
Rated current		90mA	50mA
Valve open/closing time		Approx. 9 s (50 Hz)	Approx. 7.5 s (60 Hz)
Rated time		30%ED (Maximum continuous operation time: 10 min)	
External output		One each for opening/closing	
Insulation class		Class E	
Insulation strength		1 min./1500V AC or 1 s/1800V AC	
Insulation resistance		10MΩ or more (500V DC)	
Service environment		Indoor use only (No direct exposure to the sunlight) −20°C to +50°C (No freezing)	
Mounting orientation		Vertical to horizontal	
Overload protection		Impedance protection	
Cable specification	Connection	Cable connection	
	Cable	0.5SQ, six cores, Length: 500mm	
Body material		PC, PPS	
Protection rate		Equivalent to IP65 of IEC60529 (Contact KITZ for submergence resistance.)	
Dismounting of actuator		Removal of two fixing pins	
Manual operation		Removal of actuator	
Compliance with RoHS		ESA□00-UTASE (SCS13A valves): Standard	

Type ES actuator circuit diagrams

(with the valve fully closed)



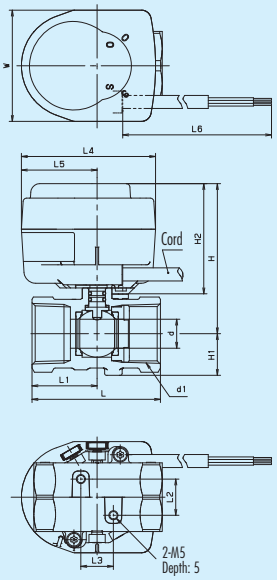
* Wire color: R red, W white, B black, Y yellow, G green, Br brown
* Valve in the fully closed position is shown in the circuit diagram above.
* In the case where yellow cable or green cable is not loaded for connection, do NOT connect them. Please insulate them individually.
* Ground the product to prevent an electric shock.

Type ES Electric Actuators/Class 10K Brass or Stainless Steel Ball Valves

Fig. of actuator-to-valve assemblies

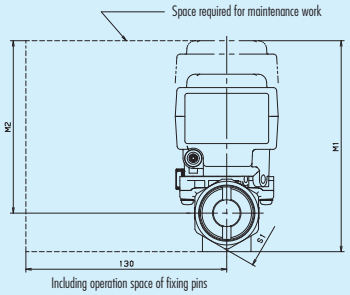
ESA100/200-TASE
ESA100/200-UTASE

The photo shows ESA100/200-TASE



Valve material

Parts	Materials	
	ESA□00-TASE	ESA□00-UTASE
Body	C3771	SCS13A
Stem	C3531+Cr plated	SUS316+Ni-Cr plated
Ball	C3771+Ni-Cr plated	SUS316
Insert	C3771	SUS316: 1/2B SUS14A: 3/4B, 1B
Ball seat	PTFE	
O ring	FKM	
Bolt	SUS304	



Dimensions (mm)

Valve Size (inch)	Cv	d	d1	H	H1	L	L1	L2	L3	S1	M1	M2	Actuator				
													H2	L4	L5	L6	W
1/2	5	9.2	Rc1/2	77.3	17	56.5	27.5	14	14	25	115	98	61.5	74.5	42	500	61.5
3/4	10	12.5	Rc3/4	79.8	20	59	30	17	16	32	120	100					
1	15	16	Rc1	83	23	71	36	20	18	38	126	103					

Precautions for Trouble-free Operation of Electric Actuator Driven Ball Valves

Storage and Handling

Electrically operated KITZ compact ball valves are individually packed in styrofoam boxes. Do NOT 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. Do NOT place any other objects on actuators, and do NOT 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 bolts securely. Clean valve and pipe bores to remove welding spatters, scales or any other foreign objects that 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.

Do NOT use them in explosive or corrosive gaseous conditions, to avoid explosions, or damage to terminal contacts.

If there are materials containing silicon in the surrounding environment, a contact failure may occur due to the generation of siloxane gas. Do NOT use the product in a siloxane gas atmosphere.

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 electrical components and accessories.

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

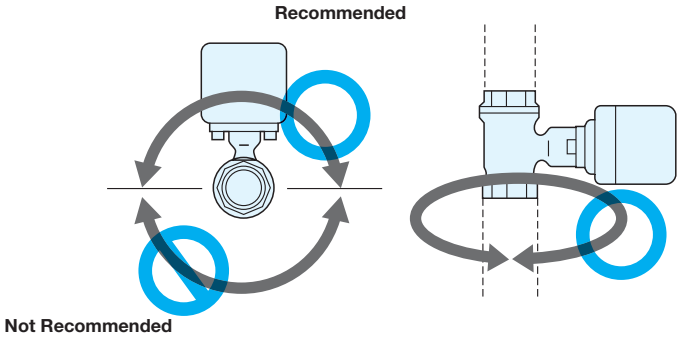
EA	**EAL**	**EAH**	**EC**	**EAE**	**ED**	**ES**
EAB	**EALB**	**EAHB**				

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.

Do NOT use silicon-containing materials (electric wire, filler, adhesive) when wiring. It may result in a contact failure due to the generation of siloxane gas.

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, do NOT mount any lower than the horizontal level, as intrusion of rainwater may affect the quality of electric components and accessories.



Design Features of KITZ C・CS/FBS Series Actuators

- ■ Lightweight and compact size
  Die-casted aluminum body and double piston mechanism make the actuator lightweight and compact.
- ■ Simple mechanism and less malfunction
  This actuator consists of minimum number of parts. That makes the actuator longer service life and less possibility of malfunction.
- ■ Special solenoid valve
  Direct mount type special solenoid valve exclusively used for KITZ C-type actuator is available.
- ■ Highly efficient quarter turn actuator
  Double piston type rack and pinion mechanism provides highly efficient quarter turn rotation.
- ■ Direct mount type
  The actuator is directly mounted on a valve with only two bolts.

FBS-type actuator should be chosen for bigger size valves.

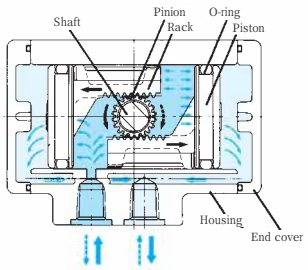
Standard guide actuator selection

Fig \ Size	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
TE		C-1				CS-2		
		CS-1	CS-2			(FBS-1)		
TFE			C-1		C-2			
			CS-2	(FBS-1)				
TLE			C-1			C-2		
			CS-2			(FBS-1)		
TNE			C-1			C-2		
	CS-1		CS-2			(FBS-1)		
TUE			C-1					
			CS-2					
UTE			C-1			C-2		
	CS-1		CS-2			(FBS-1)		
UTFE			C-1		C-2			
			CS-2	(FBS-1)				
UTGE	C-1		C-2					
	CS-2		(FBS-1)					
5/10UTWE		C-1		C-2				
		CS-2		(FBS-1)				

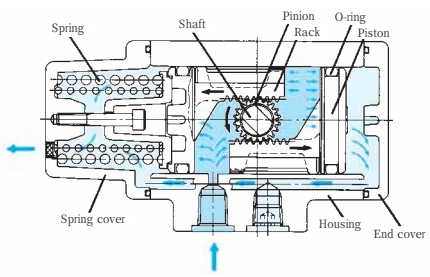
■ For the size ranges not covered by KITZ C Series actuators, more powerful KITZ Type FBS-1 actuators are recommended.

KITZ C・CS Series Pneumatic Actuators

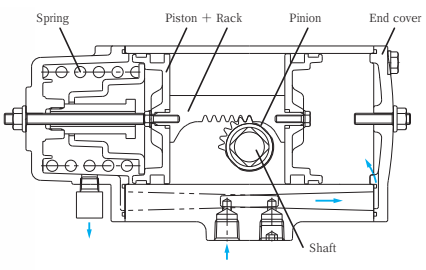
Type C (Double action)



Type CS (Spring return)



Type FBS (Spring return)



Actuator design Specifications

Specification / Type	C-1	C-2	CS-1	CS-2	FBS-1
Operating media	Instrumentation air				
Standard operating pressure	0.4 MPa (60 psi)				
Operating pressure range	0.4–0.7 MPa (60–100 psi)				
Output torque *1	3.9 N·m	8.5 N·m	1.3 N·m	3.1 N·m	7.6 N·m
Housing shell test pressure	1.0 MPa (140 psi)				
Angle of revolution	90 °(+1 °to +5 °)				90 °±7 °
Cylinder volume (Liter)	0.073	0.160	0.033	0.071	0.15
Operation time	Max. 1 s*4				
Service temperature range*2	−20°C to +60°C −4°F to +140°F				−20°C to +80°C −4°F to +176°F
Ambient condition*3	Indoor				

Notes:
*1 At supply pressure, 0.4 MPa
*2 Free from freezing of supply air
*3 For outdoor service, consult a KITZ Engineer
*4 On a condition of KITZ standard air equipment and no load on a valve

KITZ Standard Accessories

C-type actuator has a direct mount-type special solenoid valve. It makes piping-less and compact mounting. This special solenoid valve is not waterproof type. Prevent water if you use them outdoor.

◆ Special Solenoid Valve

Electrical connection	Lead wire type
Working pressure range	0.15 to 0.7 MPa
Ambient temperature range	5 to 50°C
Air inlets	Rc1/8
Effective area of valve	4.0 mm²
Power supply	AC100, 110 V/50, 60 Hz:±10% AC200, 220 V/50, 60 Hz:±10% DC24:±10%

◆ Limit Switch

Sensing position	One position
Power supply	AC: 5 A-125 V AC 5 A-250 V AC DC: 0.5 A-115 V DC 0.25 A-230 V DC
Ambient temperature range	−10 to 70°C
Electrical connection	Conduit type
Electric wire diameter	φ5.8 to φ7.8

◆ Filter-Regulator

Structure	Relief type
Working pressure range	0.04 to 0.83 MPa
Ambient temperature range	5 to 65°C
Nominal filtration rating	5 μm
Air inlets	Rc1/4"

◆ Silencer

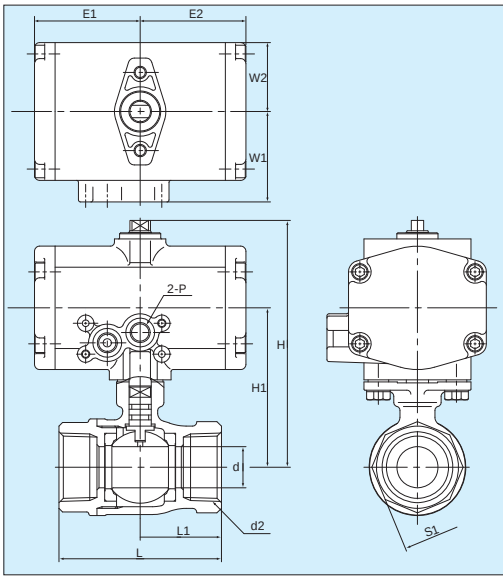
Connection	Rc1/8
Effective area	15 mm²
Noise reduction	18 dB
Maximum working pressure	0.9 MPa
Ambient temperature range	5 to 60°C

◆ Speed Controller

Structure	Restrictor	Exhaust restrictor	Exhaust restrictor with silencer
Working pressure range	0.05 to 1MPa	0.1 to 1MPa	0 to 1MPa
Ambient temperature range	5 to 60°C	−5 to 60°C	0 to 60°C
Air inlets	Rc1/8"	R1/8"・Rc1/8"	Rc1/8"

Type C Pneumatic Actuators/Class 10K Bronze Ball Valves

Fig. **C-TE**
(Standard bore)



Valve material

Parts	Materials
Body	CAC406
Body cap	C3771
Stem	C6782BD*1
Ball	C3531*2
Ball seat	PTFE
O-ring	FKM

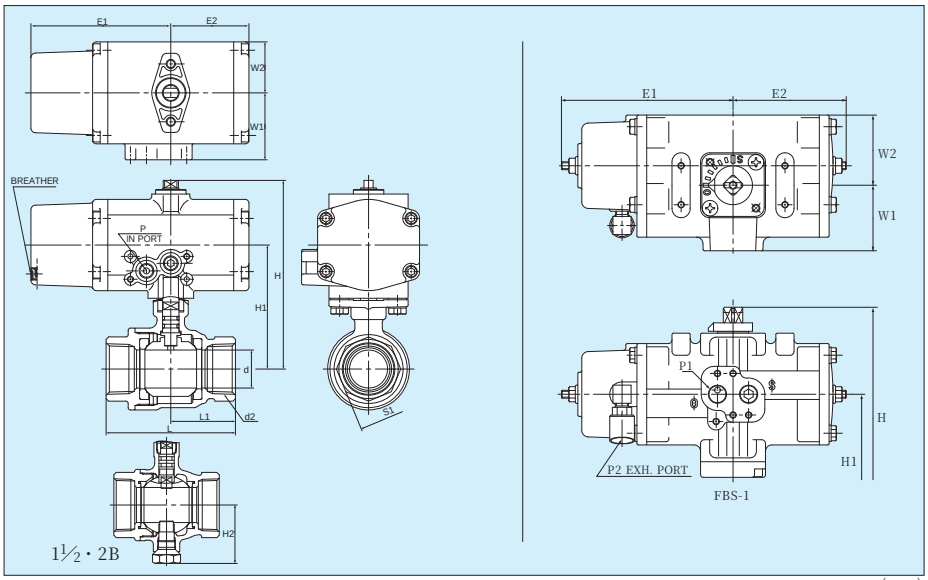
*1 Cr plated
*2 Ni-Cr plated

Dimensions (mm)

Valve Size (inch)	d	d2	H	H1	H2	L	L1	S1	Actuators E1	E2	W1	W2	P	Type
3/8	7.5	Rc3/8	87.5	56	—	46	22	22	43	43	34.5	26	Rc1/8	C-1
1/2	10	Rc1/2	93.5	62	—	65	32.5	28						
3/4	15	Rc3/4	97.5	66	—	68	34	34						
1	20	Rc1	101.5	70	—	79	39.5	41						
1 1/4	25	Rc1 1/4	124.5	82	—	86	43	50	51.4	51.4	44	33.5	Rc1/8	C-2
1 1/2	32	Rc1 1/2	137.5	95	53.5	96	48	56						
2	40	Rc2	144.5	102	60	109	54.5	68						

Type CS/FBS Pneumatic Actuators/Class 10K Bronze Ball Valves

Fig. **CS-TE**
Valve size: 3/8" to 1"
FBS-TE
Valve size: 1 1/4" to 2"
(Standard bore)

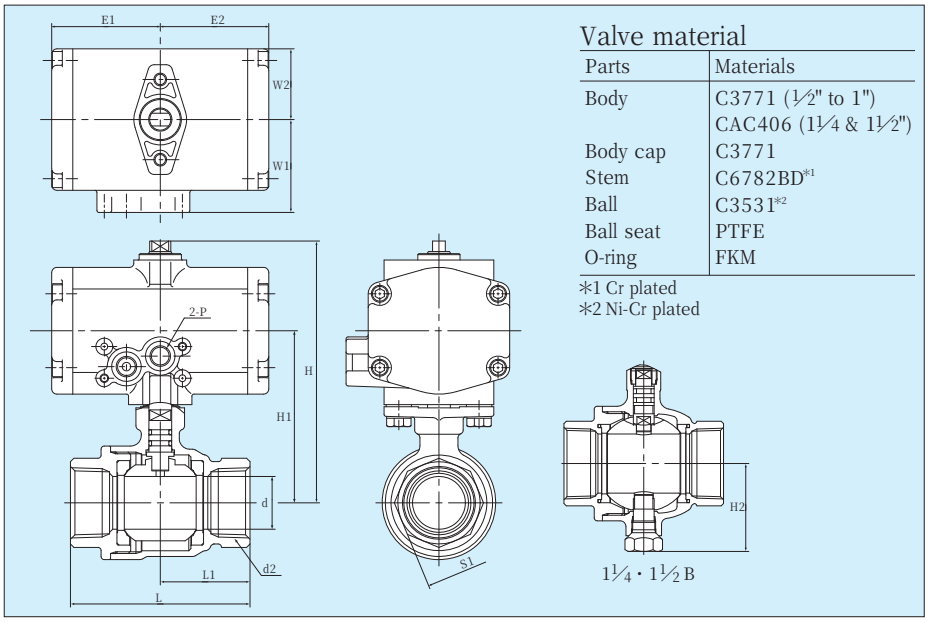


Dimensions (mm)

Valve Size (inch)	d	d2	H	H1	H2	L	L1	S1	Actuators E1	E2	W1	W2	P1	P2	Type
3/8	7.5	Rc3/8	87.5	56	—	46	22	22	69.5	43	34.5	26	—	Rc1/8	CS-1
1/2	10	Rc1/2	112.5	70	—	65	32.5	28	92	51.4	44	33.5	—	Rc1/8	CS-2
3/4	15	Rc3/4	116.5	74	—	68	34	34							
1	20	Rc1	120.5	78	—	79	39.5	41							
1 1/4	25	Rc1 1/4	182	112	—	86	43	50	132	87	50	54	Rc1/4	Rc1/8	FBS-1
1 1/2	32	Rc1 1/2	195	125	53.5	96	48	56							
2	40	Rc2	202	132	60	109	54.5	68							

Type C Pneumatic Actuators/Class 10K Copper Alloy Ball Valves, Full Bore

Fig. **C-TFE**
(Full bore)



Valve material

Parts	Materials
Body	C3771 (½" to 1") CAC406 (1¼ & 1½")
Body cap	C3771
Stem	C6782BD*1
Ball	C3531*2
Ball seat	PTFE
O-ring	FKM

*1 Cr plated
*2 Ni-Cr plated

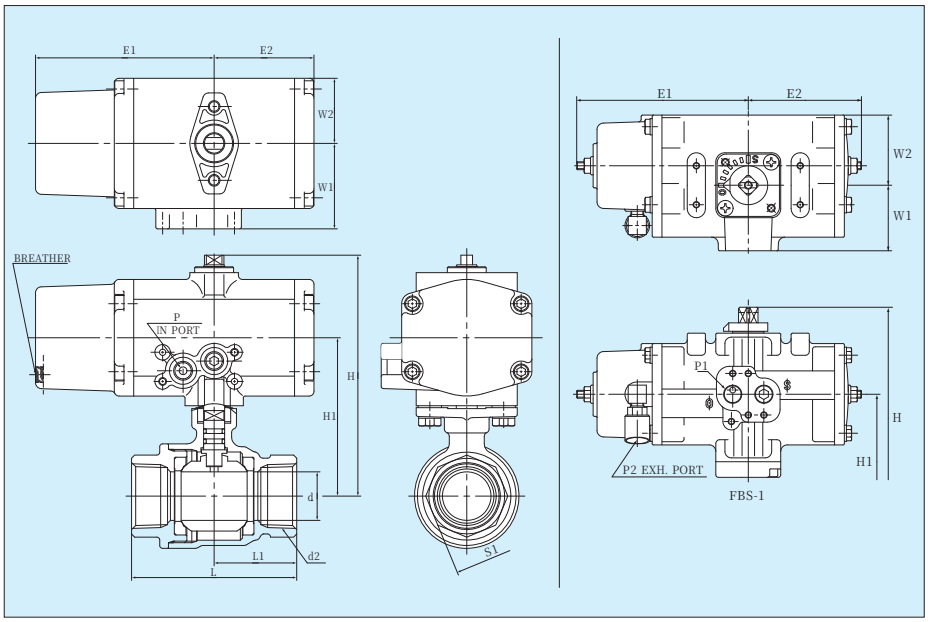
Dimensions (mm)

Valve Size (inch)	d	d2	H	H1	H2	L	L1	S1	Actuators E1	E2	W1	W2	P	Type
½	15	Rc½	97.5	66	—	63	31.5	26	43	43	34.5	26	Rc⅛	C-1
¾	20	Rc¾	101.5	70	—	73	36.5	32						
1	25	Rc1	124.5	82	—	85	42.5	39	51.4	51.4	44	33.5	Rc⅛	C-2
1¼	32	Rc1¼	138.5	96	53.5	98	49	50						
1½	40	Rc1½	144.5	102	59.5	108	54	56						

Type CS/FBS Pneumatic Actuators/Class 10K Copper Alloy Ball Valves, Full Bore

Fig. **CS-TFE**
Valve size: ½"

FBS-TFE
Valve size: ¾" to 1½"
(Full bore)

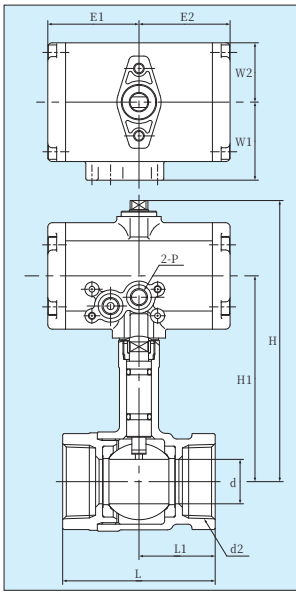


Dimensions (mm)

Valve Size (inch)	d	d2	H	H1	H2	L	L1	S1	Actuators E1	E2	W1	W2	P1	P2	Type
½	15	Rc½	108.5	66	—	63	31.5	26	92	51.4	44	33.5	—	Rc⅛	CS-2
¾	20	Rc¾	178	108	—	73	36.5	32	132	87	50	54	Rc¼	Rc⅛	FBS-1
1	25	Rc1	182	112	—	85	42.5	39							
1¼	32	Rc1¼	196	126	53.5	98	49	50							
1½	40	Rc1½	202	132	59.5	108	54	56							

Type C Pneumatic Actuators/Class 10K Long Neck Bronze Ball Valves

Fig. **C-TLE**
(Standard bore)



Valve material

Parts	Materials
Body	CAC406
Body cap	CAC406
Stem	C6782BD*1
Ball	C3531*2
Ball seat	PTFE
O-ring	FKM

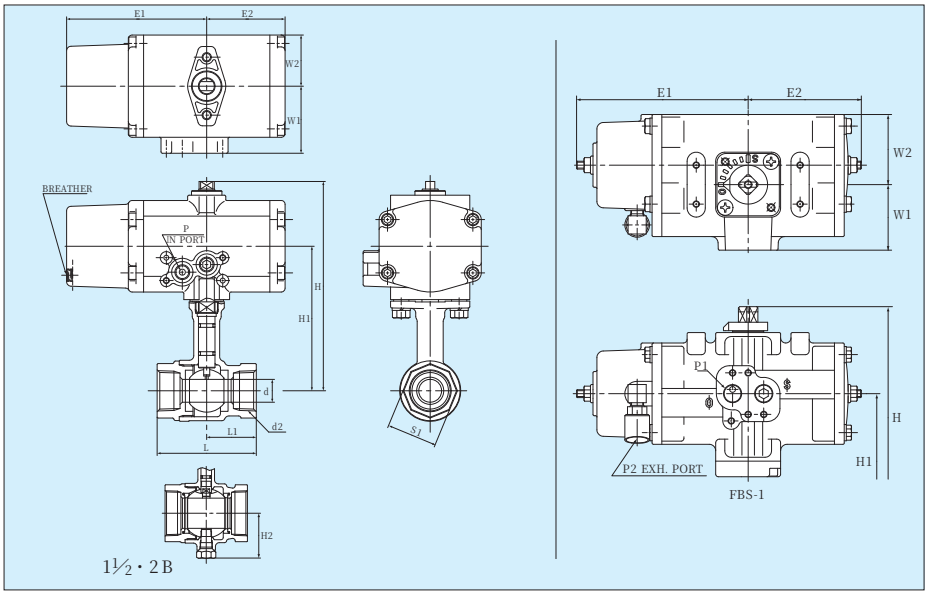
*1 Cr plated
*2 Ni-Cr plated

Dimensions (mm)

Valve Size (inch)	d	d2	H	H1	H2	L	L1	S1	Actuators E1	E2	W1	W2	P	Type
½	10	Rc½	115.5	84	—	56	28	27	43	43	34.5	26	Rc⅛	C-1
¾	15	Rc¾	120.5	89	—	65	32.5	33						
1	20	Rc1	123.5	92	—	78	39	41						
1¼	25	Rc1¼	158.5	116	—	86	43	51	51.4	51.4	44	33.5	Rc⅛	C-2
1½	32	Rc1½	161.5	119	53.5	96	48	58						
2	40	Rc2	168.5	125	60	109	54.5	71						

Type CS / FBS Pneumatic Actuators/Class 10K Long Neck Bronze Ball Valves

Fig. **CS-TLE**
Valve size: ½" to 1"
FBS-TLE
Valve size: 1¼" to 2"
(Standard bore)



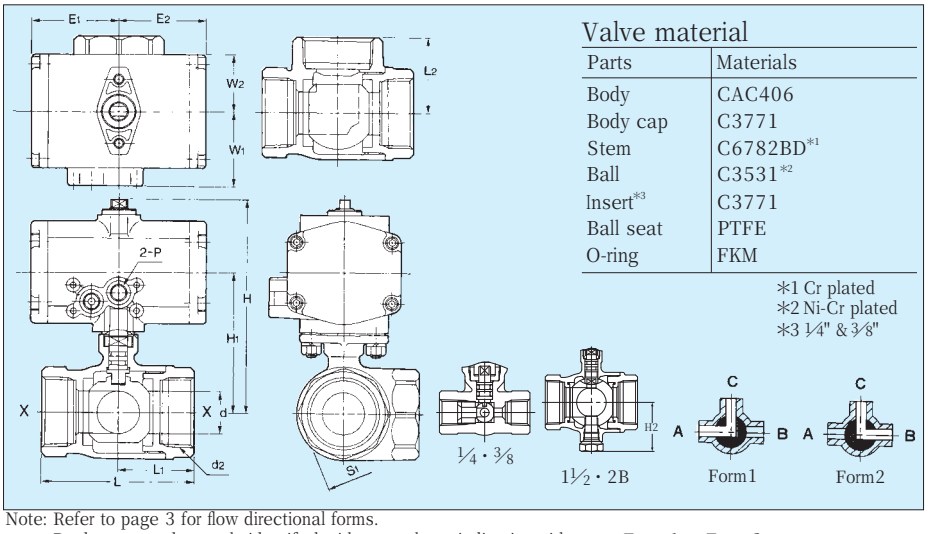
Dimensions (mm)

Valve Size (inch)	d	d2	H	H1	H2	L	L1	S1	Actuators E1	E2	W1	W2	P1	P2	Type
½	10	Rc½	134.5	92	—	56	28	27	92	51.4	44	33.5	—	Rc⅛	CS-2
¾	15	Rc¾	139.5	97	—	65	32.5	33							
1	20	Rc1	142.5	100	—	78	39	41							
1¼	25	Rc1¼	215	145	—	86	43	51	132	87	50	54	Rc¼	Rc⅛	FBS-1
1½	32	Rc1½	218	148	53.5	96	48	58							
2	40	Rc2	226	156	60	109	54.5	71							

Type C Pneumatic Actuators/Class 10K Horizontal 3-way Bronze Ball Valves

Fig. **C-TNE**
(Standard bore)

＊Stainless steel body available Fig. C-UTNE



Valve material

Parts	Materials
Body	CAC406
Body cap	C3771
Stem	C6782BD*1
Ball	C3531*2
Insert*3	C3771
Ball seat	PTFE
O-ring	FKM

＊1 Cr plated
＊2 Ni-Cr plated
＊3 ¼" & ⅜"

Note: Refer to page 3 for flow directional forms.
Products are adequately identified with nameplates indicating either one Form 1 or Form 2.

Dimensions (mm)

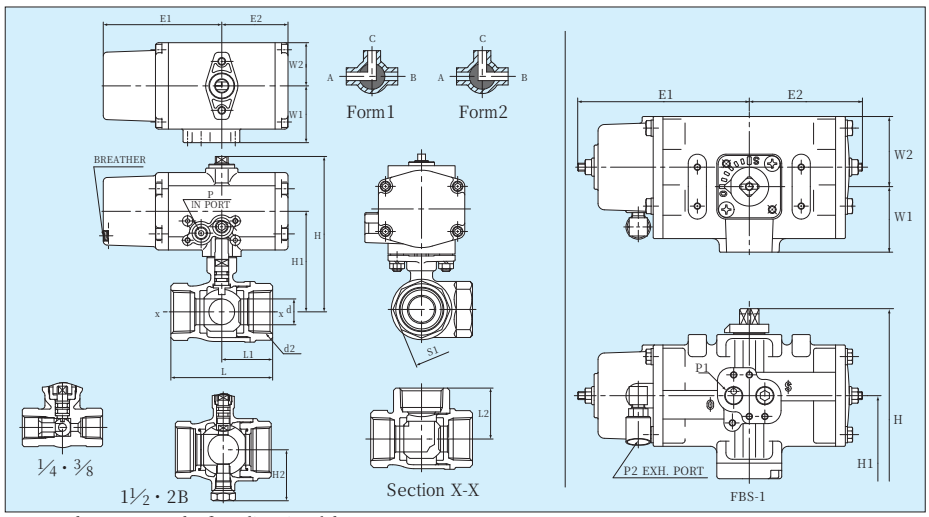
Valve Size (inch)	d	d2	H	H1	H2	L	L1	L2	S1	Actuators E1	E2	W1	W2	P	Type
¼	4.5	Rc¼	85.5	54	—	46	23	23	21	43	43	34.5	26	Rc⅛	C-1
⅜	6.8	Rc⅜	85.5	54	—	46	23	23	21						
½	10	Rc½	93.5	62	—	67	33.5	33.5	28						
¾	15	Rc¾	97.5	66	—	68	34	34	34						
1	20	Rc1	101.5	70	—	79	39.5	39.5	41						
1¼	25	Rc1¼	125.5	83	—	89	44.5	44.5	50	51.4	51.4	44	33.5	Rc⅛	C-2
1½	32	Rc1½	138.5	96	53.5	100	50	50	56						
2	40	Rc2	144.5	102	60	115	57.5	57.5	68						

Type CS/FBS Pneumatic Actuators/Class 10K Horizontal 3-way Bronze Ball Valves

Fig. **CS-TNE**
Valve size: ¼" to 1"

FBS-TNE
Valve size: 1¼" to 2"
(Standard bore)

＊Stainless steel body available Fig. CS-UTNE/FBS-UTNE



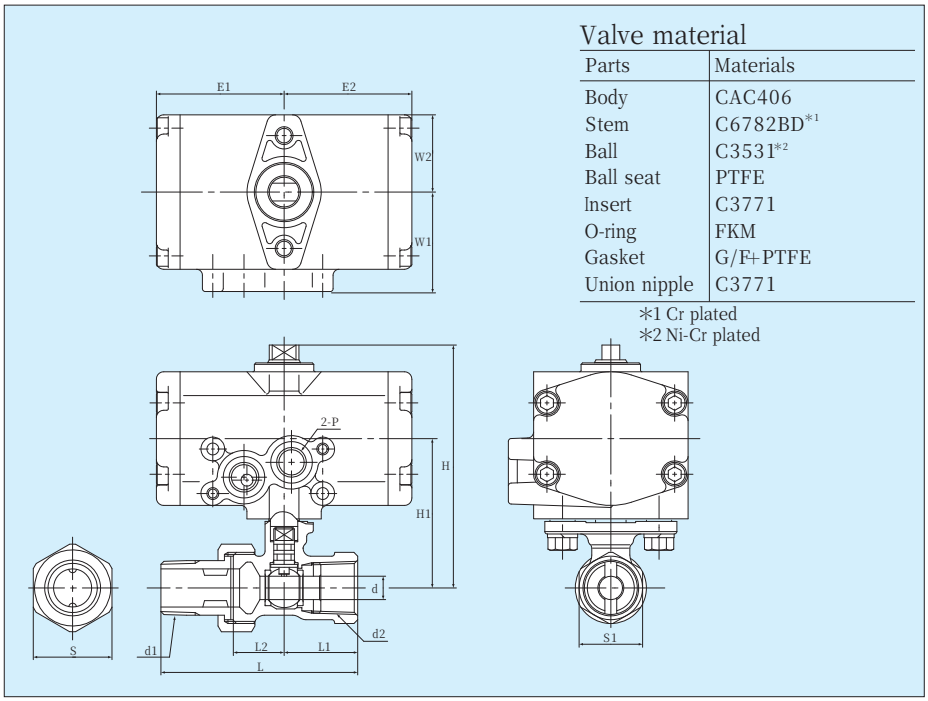
Note: Refer to page 3 for flow directional forms.
Products are adequately identified with nameplates indicating either one Form 1 or Form 2.

Dimensions (mm)

Valve Size (inch)	d	d2	H	H1	H2	L	L1	L2	S1	Actuators E1	E2	W1	W2	P1	P2	Type
¼	4.5	Rc¼	85.5	54	—	46	23	23	21	69.5	43	34.5	26	—	Rc⅛	CS-1
⅜	6.8	Rc⅜	85.5	54	—	46	23	23	21							
½	10	Rc½	112.5	70	—	67	33.5	33.5	28	92	51.4	44	33.5	—	Rc⅛	CS-2
¾	15	Rc¾	116.5	74	—	68	34	34	34							
1	20	Rc1	120.5	78	—	79	39.5	39.5	41							
1¼	25	Rc1¼	183	113	—	89	44.5	44.5	50	132	87	50	54	Rc¼	Rc⅛	FBS-1
1½	32	Rc1½	196	126	53.5	100	50	50	56							
2	40	Rc2	202	132	60	115	57.5	57.5	68							

Type C Pneumatic Actuators/Class 10K Union-Nipple Bronze Ball Valves

Fig. **C-TUE**
(Reduced bore)



Valve material

Parts	Materials
Body	CAC406
Stem	C6782BD*1
Ball	C3531*2
Ball seat	PTFE
Insert	C3771
O-ring	FKM
Gasket	G/F+PTFE
Union nipple	C3771

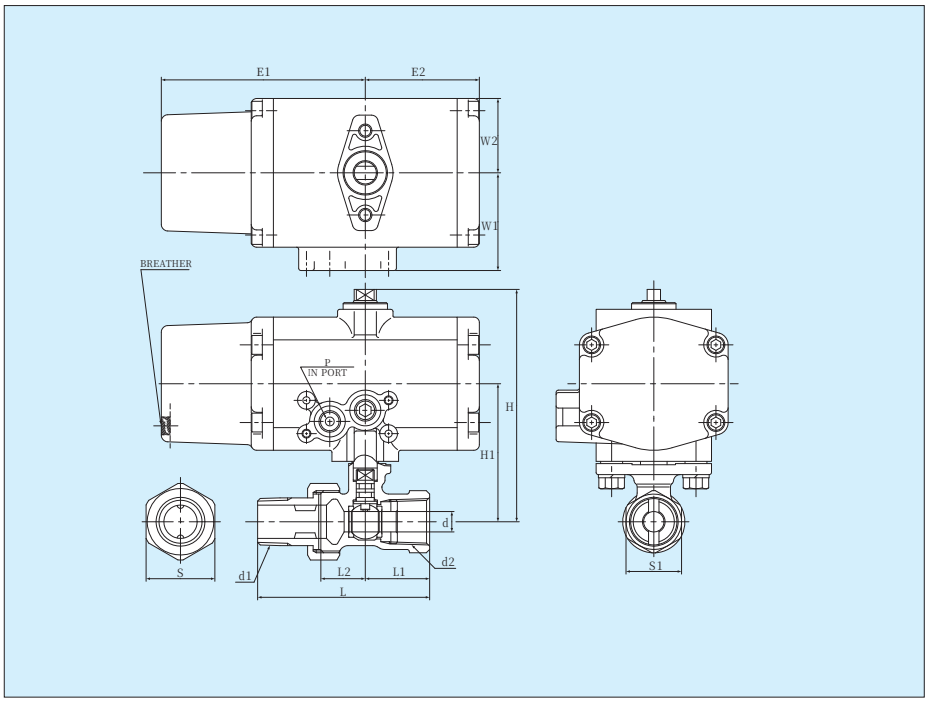
*1 Cr plated
*2 Ni-Cr plated

Dimensions (mm)

Valve Size (inch)	d	d_2	d_1	H	H_1	L	L_1	L_2	S	S_1	Actuators					
											E_1	E_2	W_1	W_2	P_2	Type
1/2	8	Rc1/2	R1/2	85.5	54	78.5	29	20	31	25	43	43	34.5	26	Rc1/8	C-1
3/4	11	Rc3/4	R3/4	88.5	57	81	29	20	36	32						

Type CS Pneumatic Actuators/Class 10K Union-Nipple Bronze Ball Valves

Fig. **CS-TUE**
(Reduced bore)

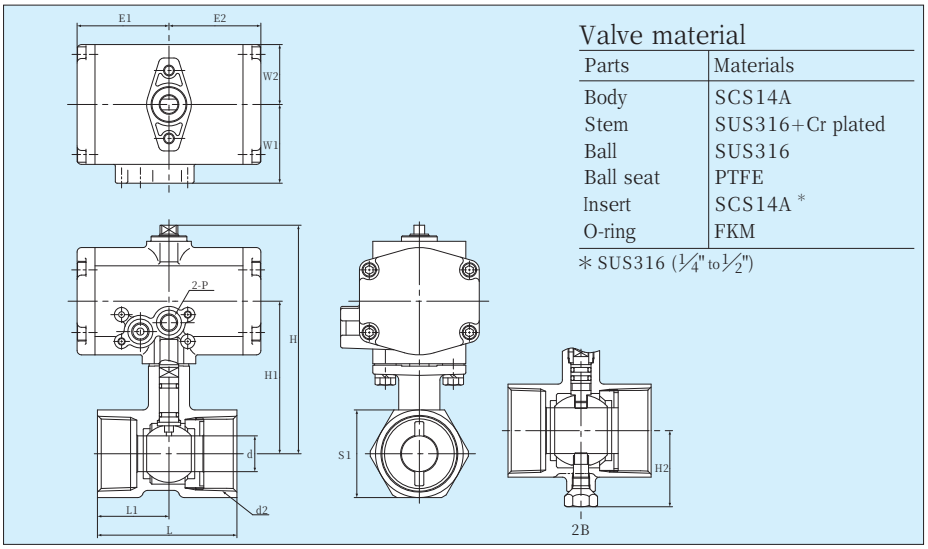


Dimensions (mm)

Valve Size (inch)	d	d_2	d_1	H	H_1	L	L_1	L_2	S	S_1	Actuators					
											E_1	E_2	W_1	W_2	P_2	Type
1/2	8	Rc1/2	R1/2	104.5	62	78.5	29	20	31	25	92	51.4	44	33.5	Rc1/8	CS-2
3/4	11	Rc3/4	R3/4	107.5	65	81	29	20	36	32						

Type C Pneumatic Actuators/Class 10K Stainless Steel Ball Valves

Fig. **C-UTE**
(Reduced bore)



Valve material

Parts	Materials
Body	SCS14A
Stem	SUS316+Cr plated
Ball	SUS316
Ball seat	PTFE
Insert	SCS14A *
O-ring	FKM

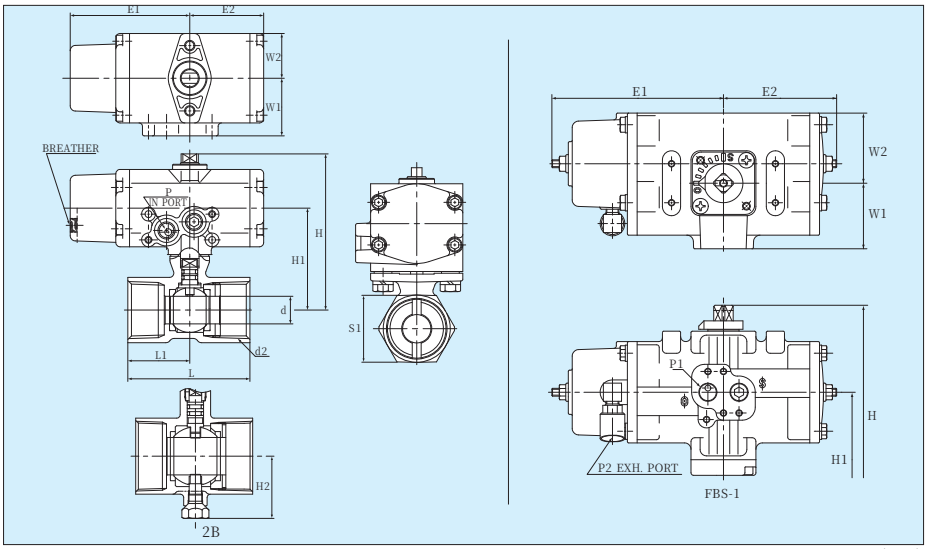
* SUS316 (1/4" to 1/2")

Dimensions (mm)

Valve Size (inch)	d	d_2	H	H_1	H_2	L	L_1	S_1	Actuators					
									E_1	E_2	W_1	W_2	P	Type
1/4	4.5	Rc1/4	85.5	54	—	44	21	21	43	43	34.5	26	Rc1/8	C-1
3/8	6.8	Rc3/8	85.5	54	—	44	21	21						
1/2	9.2	Rc1/2	85.5	54	—	56.5	27.5	25						
3/4	12.5	Rc3/4	88.5	57	—	59	30	32						
1	16	Rc1	91.5	60	—	71	36	38						
1 1/4	20	Rc1 1/4	128.5	86	—	78	40	49	51.4	51.4	44	33.5	Rc1/8	C-2
1 1/2	24.5	Rc1 1/2	131.5	89	—	83	42.5	53						
2	32	Rc2	137.5	95	53.5	100	51	65						

Type CS/FBS Pneumatic Actuators/Class 10K Stainless Steel Ball Valves

Fig. **CS-UTE**
Valve size: 1/4" to 1"
FBS-UTE
Valve size: 1 1/4" to 2"
(Reduced bore)

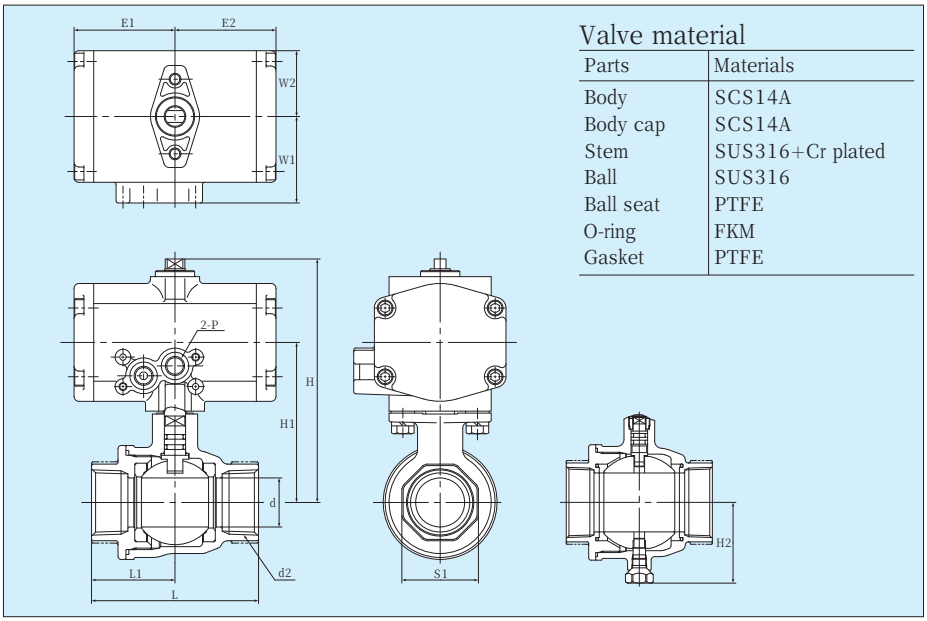


Dimensions (mm)

Valve Size (inch)	d	d_2	H	H_1	H_2	L	L_1	S_1	Actuators						
									E_1	E_2	W_1	W_2	P_1	P_2	Type
1/4	4.5	Rc1/4	85.5	54	—	44	21	21	69.5	43	34.5	26	—	Rc1/8	CS-1
3/8	6.8	Rc3/8	85.5	54	—	44	21	21							
1/2	9.2	Rc1/2	104.5	62	—	56.5	27.5	25	92	51.4	44	33.5	—	Rc1/8	CS-2
3/4	12.5	Rc3/4	107.5	65	—	59	30	32							
1	16	Rc1	110.5	68	—	71	36	38							
1 1/4	20	Rc1 1/4	186	116	—	78	40	49	132	87	50	54	Rc1/4	Rc1/8	FBS-1
1 1/2	24.5	Rc1 1/2	189	119	—	83	42.5	53							
2	32	Rc2	195	125	53.5	100	51	65							

Type C Pneumatic Actuators/Class 10K Stainless Steel Ball Valves, Full Bore

Fig. **C-UTFE**
(Full bore)



Valve material

Parts	Materials
Body	SCS14A
Body cap	SCS14A
Stem	SUS316+Cr plated
Ball	SUS316
Ball seat	PTFE
O-ring	FKM
Gasket	PTFE

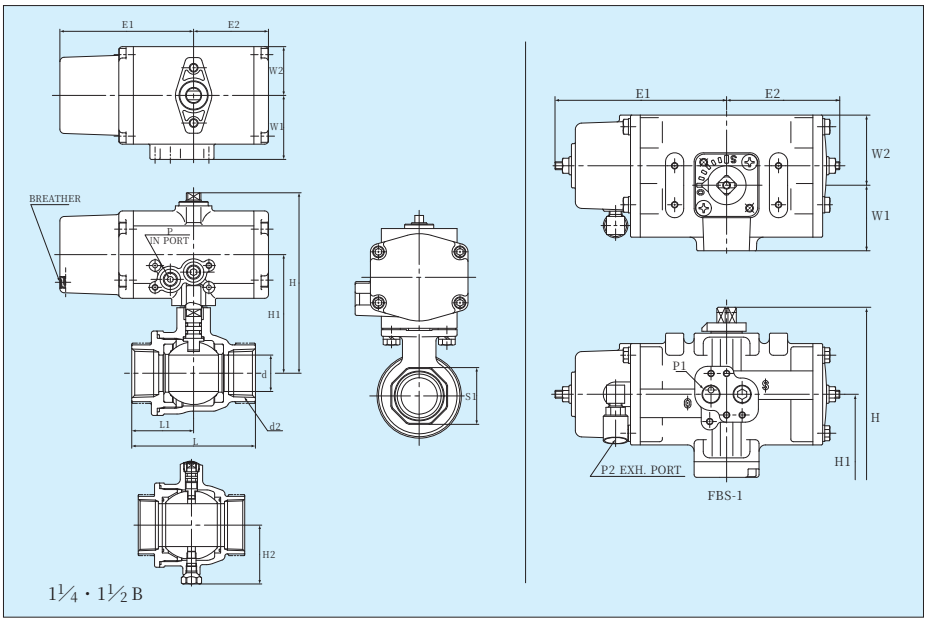
Dimensions (mm)

Valve Size (inch)	d	d_2	H	H_1	H_2	L	L_1	S_1	Actuators					
									E_1	E_2	W_1	W_2	P	Type
1/2	15	Rc1/2	97.5	66	—	62	31	26	43	43	34.5	26	Rc1/8	C-1
3/4	20	Rc3/4	101.5	70	—	73	36.5	32						
1	25	Rc1	124.5	82	—	85	42.5	39	51.4	51.4	44	33.5	Rc1/8	C-2
1 1/4	32	Rc1 1/4	138.5	96	55	98	49	48						
1 1/2	40	Rc1 1/2	144.5	102	61	108	54	54						

Type CS/FBS Pneumatic Actuators/Class 10K Stainless Steel Ball Valves, Full Bore

Fig. **CS-UTFE**
Valve size: 1/2"

FBS-UTFE
Valve size: 3/4" to 1 1/2"
(Full bore)

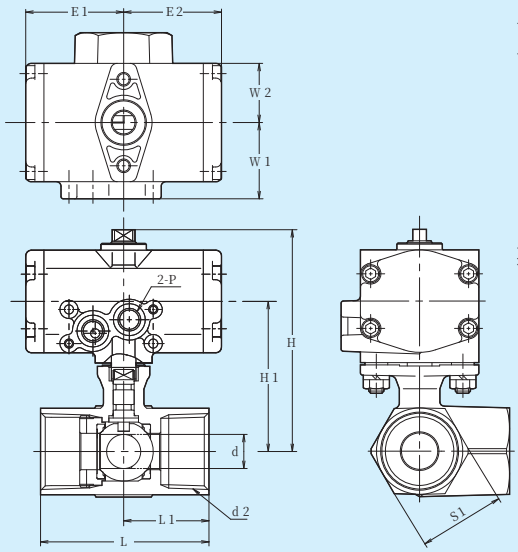


Dimensions (mm)

Valve Size (inch)	d	d_2	H	H_1	H_2	L	L_1	S_1	Actuators						
									E_1	E_2	W_1	W_2	P_1	P_2	Type
1/2	15	Rc1/2	116	74	—	62	31	26	92	51.4	44	33.5	—	Rc1/8	CS-2
3/4	20	Rc3/4	178	108	—	73	36.5	32	132	87	50	54	Rc1/4	Rc1/8	FBS-1
1	25	Rc1	182	112	—	85	42.5	39							
1 1/4	32	Rc1 1/4	196	126	55	98	49	48							
1 1/2	40	Rc1 1/2	202	132	61	108	54	54							

Type C Pneumatic Actuators/Class 10K Stainless Steel Ball Valves, with Gland

Fig. **C-UTGE**
(Reduced bore)



Valve material

Parts	Materials
Body	SCS14A
Stem	SUS316+Cr plated
Ball	SUS316
Ball seat	Reinforced PTFE
Insert	SCS14A*
Gland packing	Flexible graphite +PTFE braided packing

* SUS316 (1/4" to 1/2")

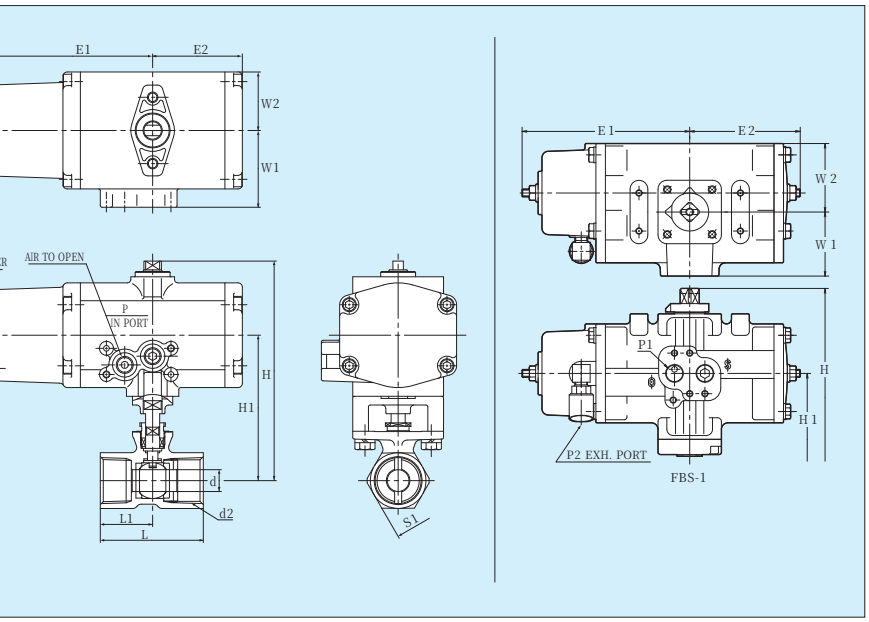
Dimensions (mm)

Valve Size (inch)	d	d2	H	H1	L	L1	S1	Actuators E1	E2	W1	W2	P	Type
1/4	4.5	Rc1/4	105.5	74	44	21	21	43	43	34.5	26	Rc1/8	C-1
3/8	6.8	Rc3/8	105.5	74	44	21	21						
1/2	9.2	Rc1/2	124.5	82	56.5	27.5	25	51.4	51.4	44	33.5	Rc1/8	C-2
3/4	12.5	Rc3/4	127.5	85	59	30	32						
1	16	Rc1	130.5	88	71	36	38						

Type CS/FBS Pneumatic Actuators/Class 10K Stainless Steel Ball Valves, with Gland

Fig. **CS-UTGE**
Valve size: 1 1/4" to 3/8"

FBS-UTGE
Valve size: 1/2" to 1"
(Reduced bore)

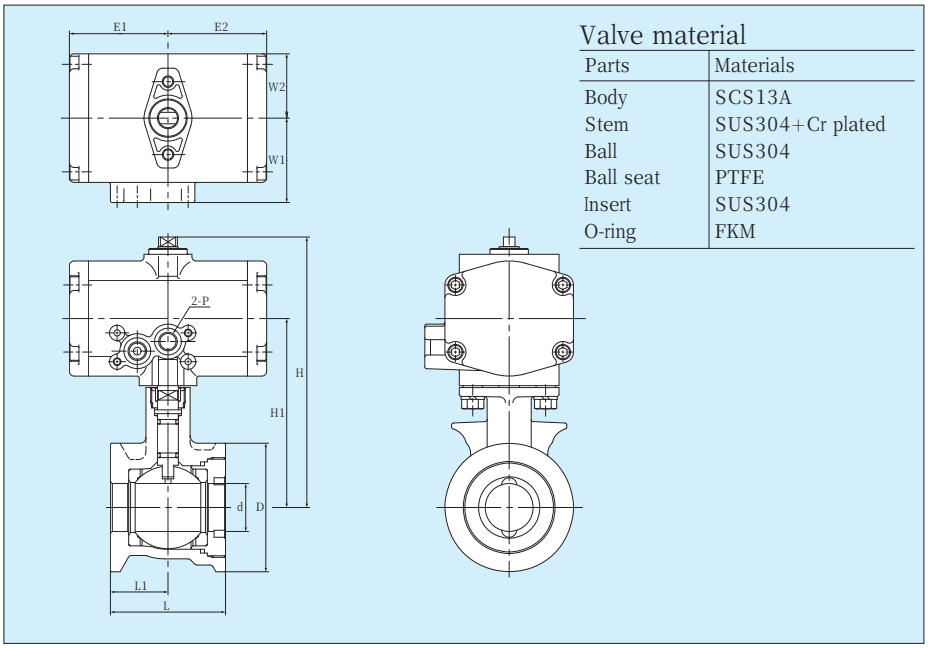


Dimensions (mm)

Valve Size (inch)	d	d2	H	H1	L	L1	S1	Actuators E1	E2	W1	W2	P1	P2	Type
1/4	4.5	Rc1/4	124.5	82	44	21	21	92	51.4	44	33.5	—	Rc1/8	CS-2
3/8	6.8	Rc3/8	124.5	82	44	21	21							
1/2	9.2	Rc1/2	180.7	110.7	56.5	27.5	25	132	87	50	54	Rc1/4	Rc1/8	FBS-1
3/4	12.5	Rc3/4	183.2	113.2	59	30	32							
1	16	Rc1	186.4	116.4	71	36	38							

Type C Pneumatic Actuators/Class 5K/10K Wafer Stainless Steel Ball Valves

Fig. **C-5/10UTWE**
(Full bore)



Valve material

Parts	Materials
Body	SCS13A
Stem	SUS304+Cr plated
Ball	SUS304
Ball seat	PTFE
Insert	SUS304
O-ring	FKM

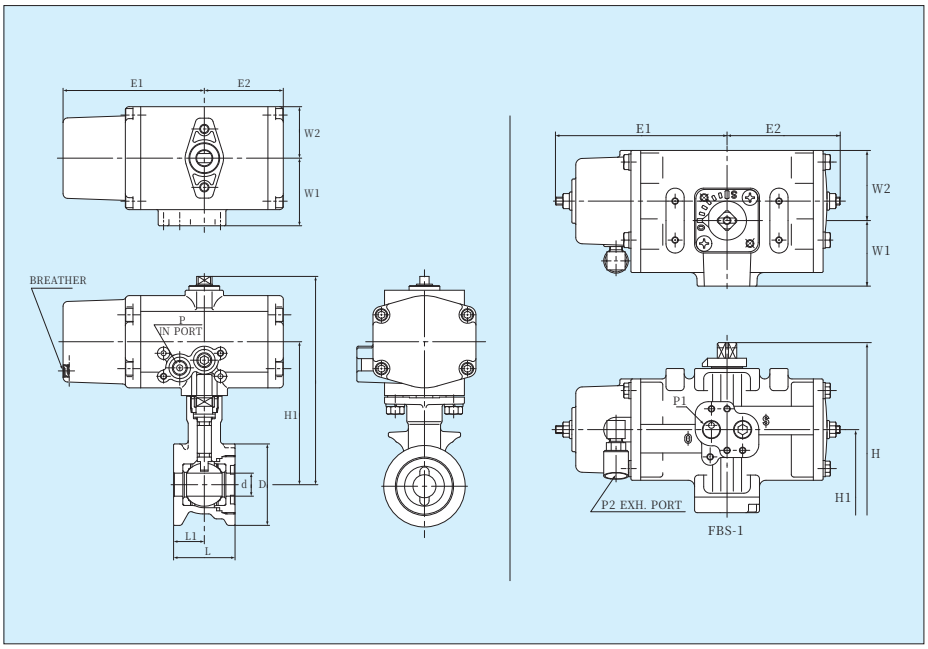
Dimensions (mm)

Valve Size (inch)	d	H	H1	L	L1	D		Actuators					
						5UTWE	10UTWE	E1	E2	W1	W2	P	Type
3/8	10	114.5	83	35	17.5	43	48	43	43	34.5	26	Rc1/8	C-1
1/2	15	117.5	86	40	20	48	53						
3/4	20	138.5	96	50	25	53	58	51.4	51.4	44	33.5	Rc1/8	C-2
1	25	146.5	104	60	30	63	69						

Type CS/FBS Pneumatic Actuators/Class 5K/10K Wafer Stainless Steel Ball Valves

Fig. **CS-5/10UTWE**
Valve size: 3/8" to 1/2"

FBS-5/10UTWE
Valve size: 3/4" to 1" (Full bore)



Dimensions (mm)

Valve Size (inch)	d	H	H1	L	L1	D		Actuators						
						5UTWE	10UTWE	E1	E2	W1	W2	P1	P2	Type
3/8	10	133.5	91	35	17.5	43	48	92	51.4	44	33.5	—	Rc1/8	CS-2
1/2	15	136.5	94	40	20	48	53							
3/4	20	196	126	50	25	53	58	132	87	50	54	Rc1/4	Rc1/8	FBS-1
1	25	204	134	60	30	63	69							

Precautions for Trouble-free Operation of Pneumatic Actuator Driven Ball Valves

Storage and Handling

Pneumatically operated KITZ compact ball valves are individually packed in Styrofoam boxes. Do NOT 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. Do NOT place any other objects on actuators, and do NOT step on actuators. Overloading actuators must always be prevented.

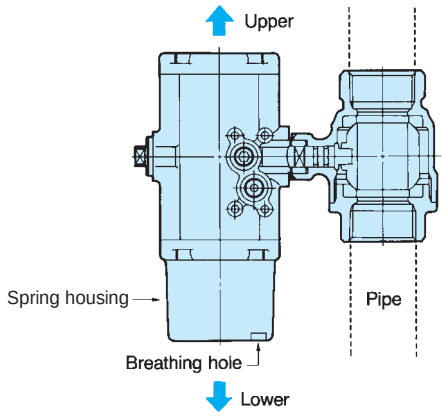
Mounting and Piping

Before mounting pneumatically operated KITZ compact ball valves, make visual inspection of all valves, actuators and accessories to assure trouble-free condition. Tighten any loosened bolts 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, air blow the inside of all connected pipes and valves prior to the pilot operation of the system.

Do NOT use where corrosive gas, chemical liquids, sea water cause contamination. Exposed rotating parts, such as the actuator shaft, must be protected from water or rainfall. They are not designed whether-proof.

Threading pipes or nipples on actuators must be maximized to five rotations, so that over-tightening threads may not develop cracks in die-cast aluminum housing, and cause air leakage and operational difficulty to actuators (Recommended tightening torque : 10 N-m for Rc 1/8" 15 N-m Rc 1/4"). Type CS spring return actuators should be mounted so that the exhaust hole on the cylinder, faces downwards at times (See the below) or, when unavoidable, the hole must be protected by adequate water-prevention measures.

KITZ compact ball valves can be mounted on KITZ Type C or CS actuators either horizontally, vertically or at any angle depending on your piping or operational convenience. However, filter-regulators must be mounted always horizontally, using amounting bracket.



Operation

Pneumatically operated KITZ compact ball valves are designed to be driven by air pressure ranging from 0.4 MPa to 0.7 MPa (60 to 100 psi). Smaller or larger air pressure will result in malfunction. We recommend to employ 0.4 MPa (60 psi),our standard operating pressure.
Be sure to dry and filter the air supply for trouble-free operation. This is particularly important in cold and humid climates.

Maintenance

Pneumatically operated KITZ compact ball valves are lubrication-free. When a leakage is detected on the actuator after a few years of operation, we recommended the actuator be disassembled to detect wear or deformation of sealers such as O-rings and gaskets for possible replacement.

MEMO

⚠ 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.

While this catalog has been compiled with the utmost care, we assume no responsibility for errors, impropriety or inadequacy. Any information provided in this catalog is subject to from-time-to-time change without notice for error rectification, product discontinuation, design modification, new product introduction or any other cause that KITZ Corporation considers necessary. This edition cancels all previous issues.

Read instruction manual carefully before use.

⚠ NOTICE

If any products designated as strategic material in the Foreign Exchange and Foreign Trade Law, Cabinet Order Concerning Control of Export Trade, Cabinet Order Concerning Control of Foreign Exchange and other related laws and ordinances ("Foreign Exchange Laws") are exported to any foreign country or countries, an export license issued by the Japanese Government will be required under the Foreign Exchange Laws.

Further, there may be cases where an export license issued by the government of the United States or other country will be required under the applicable export-related laws and ordinances in such relevant countries.

The contract shall become effective subject to that a relevant export license is obtained from the Japanese Government.

A chrysanthemum-handle is a symbol of KITZ,
the brand of valve reliability

ISO 9001 certified since 1989

KITZ

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