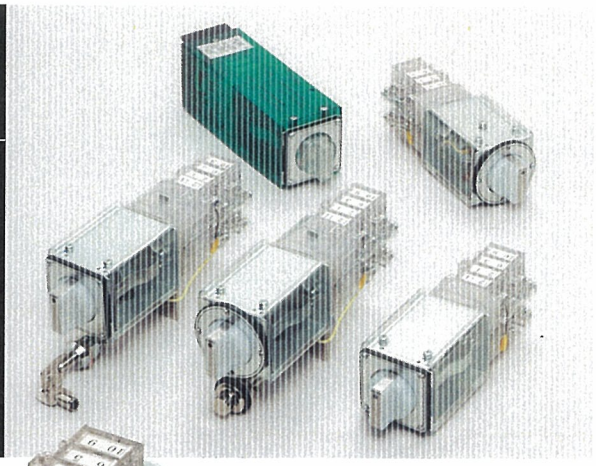
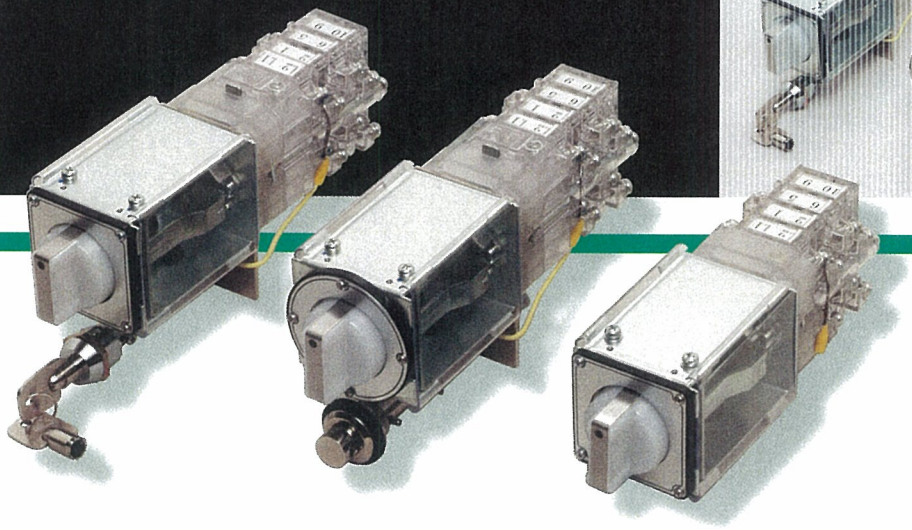
FUJI CONTROL PARTS

SWITCH

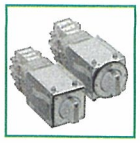
BHL Type

Discrepancy Switch



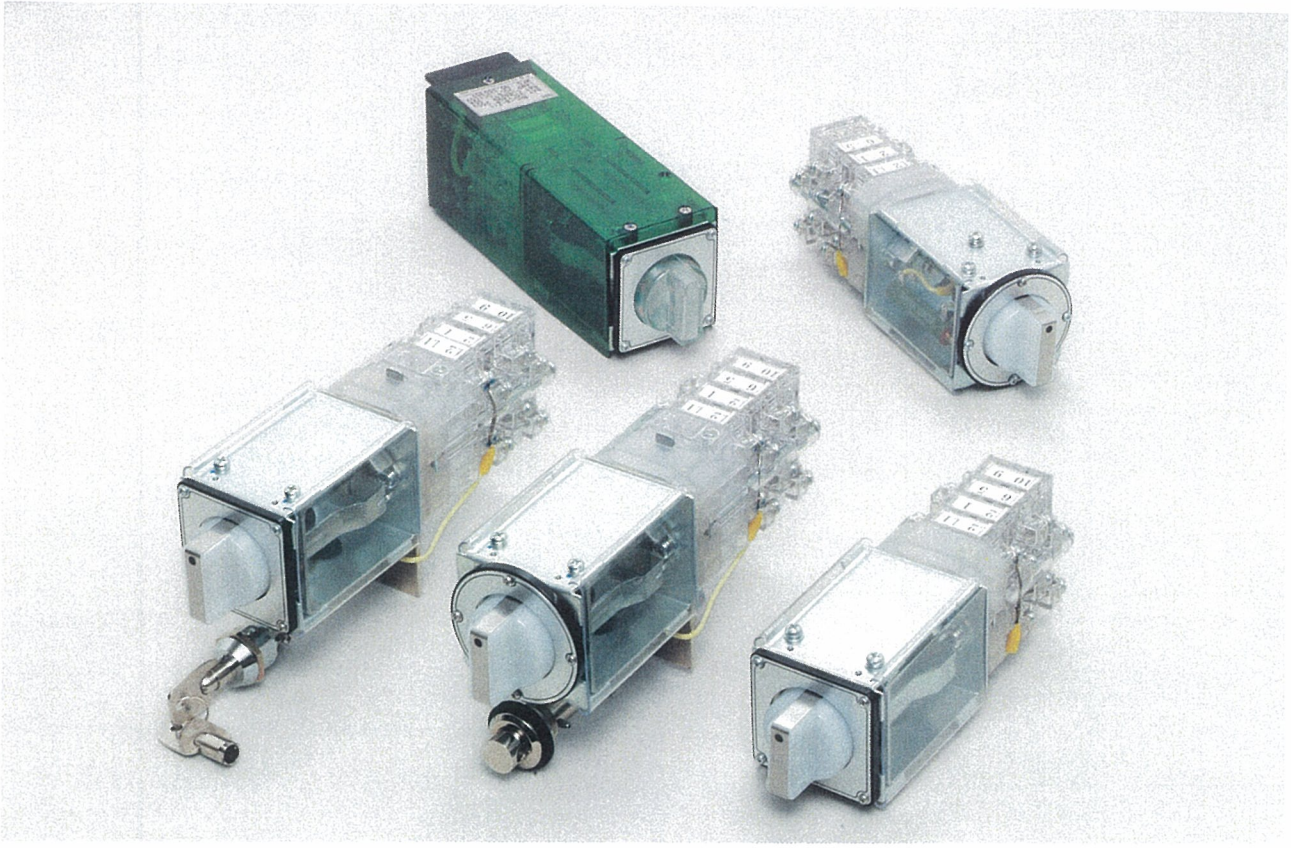


FUJI ELECTRIC INDUSTRY CO., LTD.
KYOTO, JAPAN



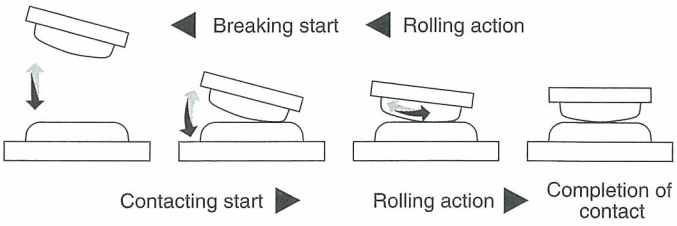
Discrepancy Switch

BHL Type



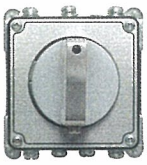
Features

1 The rolling action of contact mechanism minimizes the part exposed to the arc, and ensure the long term contacting stability.

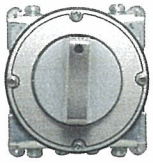


2 The breaking time is set as short as possible by optimum cam design.

3 Nameplates may be selected in either a round type or rectangular type style, which will be useful in your panel design.



Rectangular (Y) type



Round (Z) type

4 Voltage in lamp circuits is widely available among 24 V, 48 V, 110 V, 125 V, and 220 V.

5 An LED lamp with built-in flicker circuit is available. Turning the knob can start the flickering action. *For the order of this type refer to LXF (P.3 ⑦)

6 The key lock mechanism is useful for preventing un-authorized operations. Both a cylinder (BHLC type) type and a padlock (BHLP type) type are available.

7 Rear terminal type (BHL-B type) enables rapid wiring.

8 IP40 type is also available as the type BHLFX. It can prevent external penetration of foreign materials or unexpected contact with a live part. A protective grounding terminal is also provided.

Specification (ratings, performance)

Specification \ Type	BHL / BHLS types
Rated insulation voltage	690 V
Rated current-carring capacity	20 A
Max. wire size	5.5 mm²
Screw size	M4 x 9
Withstand voltage	AC 2,500 V / 1 min.
Lighting impulse	4 kV
Contact resistance	50 mΩ or less
Mechanical life	100,000 operations or more
Electrical life	500,000 operations or more
Shock resistance	500 m/s² (6 directions) (300 m/s² at the contact)
Vibration resistance	Range of vibration: 10 to 150Hz, Acceleration: 20 m/s², Time: 1 hour (3 directions)
Minimum power requirement	AC 5 V 500 mA, DC 5V 100 mA (in good operating environment)
Operating temperature	−20 to 60°C
Storing temperature	−40 to 70°C
Service condition (altitude)	2,000 m or less

■Breaking performance (electrical life of 10,000 operations)

Alternating current			Direct current				
Rated voltage (V)	Rated current resistance load (A)	Rated current induction load (A)	Rated voltage (V)	Rated current resistance load (A)	Rated current inductive load (A)	2 contacts used in series Rated current resistance load (A)	2 contacts used in series Rated current inductive load (A)
110	20	15	24	15	10	20	20
220	15	10	48	10	6	18	15
440	4	3	110	3	1.5	4.5	4
—	—	—	220	1.2	0.8	2	1.5

*Inductive For AC : Power factor 0.6 to 0.7
For DC : Time contact 40 ± 6 ms

Ratings Based on Overseas Standards (EN60947/IEC60947)

(1) Standard use conditions

No.	Item	Description	Remarks
1	Operating temperature	−5 to 40°C	IEC60947-1 6.1.1
2	Humidity	Maximum humidity of 50% at +40°C (For lower temperature than referenced above, the maximum humidity shall not exceed 90% at +20°C)	IEC60947-1 6.1.3
3	Altitude	2,000 m or less	IEC60947-1 6.1.2

(2) Rating

No.	Item	Rating				Remarks
1	Over-voltage category	Ⅲ				IEC60664-1 2.2.2.1.1
2	Degree of pollution	Degree of pollution 3				IEC60947-5-1 6.1.3.2
3	Rated insulation voltage (Ui)	690 V				IEC60947-1 4.3.1.2
4	Rated impulse withstand voltage	4 kV				IEC60947-1 4.3.1.3
5	Utilization category and rated operational voltage (Ue) rated operational current (Ui) *Electrical durability	Designation	Utilization category	Ue(V)	Ie(A)	IEC60947-5-1 Annex A
		A600	AC-15	240	3	
				100,000 operations or more*		
		P600	DC-13	250	0.55	
				20,000 operations or more*		
6	Rated frequency	50/60 Hz				IEC60947-5-1 4.3.3
7	Conventional free air thermal current (Ith)	20 A				IEC60947-1 4.3.2.1
8	Maximum value of short circuit protection device	20 A				IEC60947-5-1 8.3.4.3
9	Rated short circuit current with rated conditions	1000 A (cos ϕ=1)				IEC60947-5-1 4.3.6.4
10	Mechanical durability	100,000 operations or more				60947-5-1 Annex C C.2

Discrepancy Switch

BHL Type

How to Order

Refer to the type code arrangements.

Type code arrangements

BHL-3B3 □□□ -110 H-W-Y-B

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

① Basic type

Code	Description
BHL	Standard product
BHLS	Small knob type
BHLC	Cylinder lock type
BHLP	Padlock type
BHL-B	Rear terminal type
BHLFX	Knob-fixed with housing protective grounding terminal

② Operation

Code	Description
1	2-point change-over
2	2-point change-over followed by pushing
3	2-point change-over followed by pushing and turning to right or left

③ Selectable positions

Code	Description
A	
B	
C	
D	
E	

④ No. of units

Code	Description
1 to 6	1 to 6 [Max. 6 units (12 contacts)]

⑤ Circuit number

Code	Description
Three-digit display	Please confirm the Type Comparison Table (P9 to P10). Please consult with our sales person.

⑥ Voltage for indicator

Code	Description
024	DC24 V
048	DC48 V
110	DC110 V
125	DC125 V
220	DC220 V

⑦ Indicator type

Code	Description	BHLS	BHL, and others
H	Incandescent lamp (built-in registor type)	—	○
L1	LED lamp (built-in registor type)	○	○
L2*	Connector-type LED lamp (built-in registor type)	—	○
LXF	Flicker-type LED lamp (built-in registor type)	—	○

*Specifications for L2 DC 24 V DC 48 are not available. ○means compatible.

⑧ Knob color

Code	Description	BHLS	BHL, and others
W	Milky white (mask:silver, point:black) Standard specification for models other than L2	○	○
C	Clear, Standard specification for L2	—	○
WB	Milky white (mask:black, point:black) Special specification	○	○

○means compatible.

⑨ Flange shape and color

Code	Shape	Description
Y-B	Square	Black (N1.5)
Y-BG	Square	Blue-Green (7.5BG4/1.5)
Z-B	Round	Black (N1.5)
Z-BG	Round	Blue-Green (7.5BG4/1.5)

(Munsell color code in parentheses)

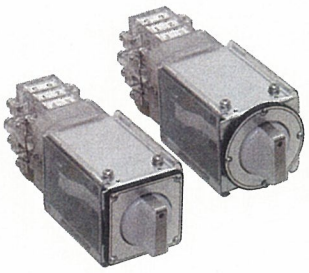
Standard Specification Products

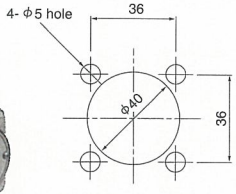
Discrepancy switch

BHL-1□

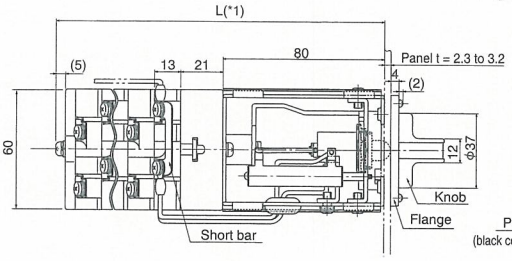
Manual switching operation type

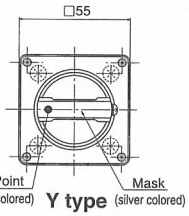
*The figure shows an LED type.



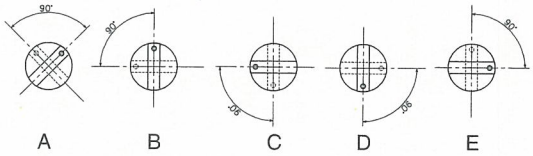


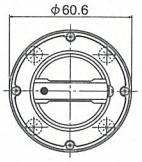
Mounting hole





Y type





Z type

(*1)

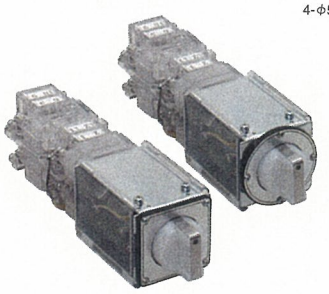
No. of units	1	2	3	4	5	6
L(mm)	137	150	163	176	189	202

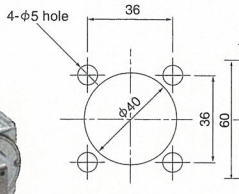
Discrepancy switch

BHL-2□

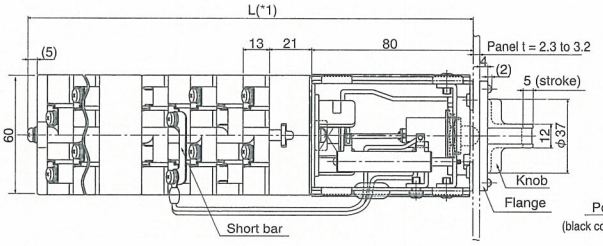
Manual switching operation type (push lock at each position)

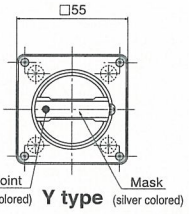
*The figure shows an LED type.



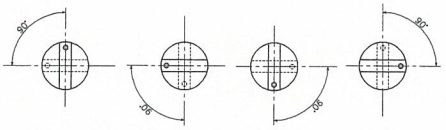


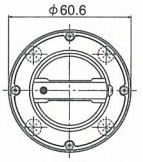
Mounting hole





Y type





Z type

(*1)

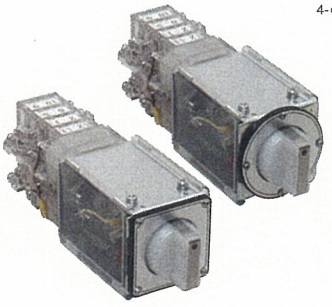
No. of units	1	2	3	4	5	6
L(mm)	197	210	223	236	249	262

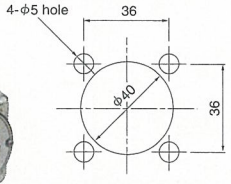
Discrepancy switch

BHL-3□

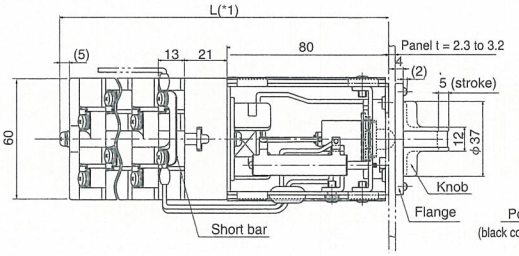
Manual switching operation type (90-deg. section)
Push auto return type (30-deg. section)

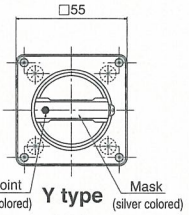
*The figure shows an LED type.



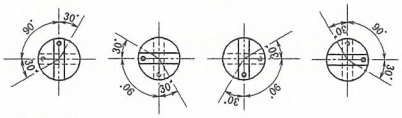


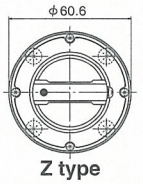
Mounting hole





Y type





Z type

(*1)

No. of units	1	2	3	4	5	6
L(mm)	137	150	163	176	189	202

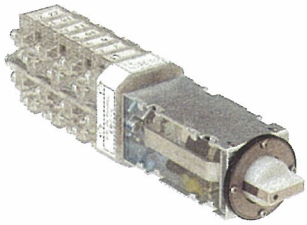
Discrepancy Switch

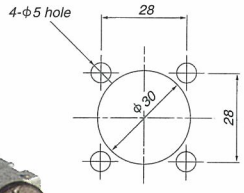
BHL Type

Standard Specification Products

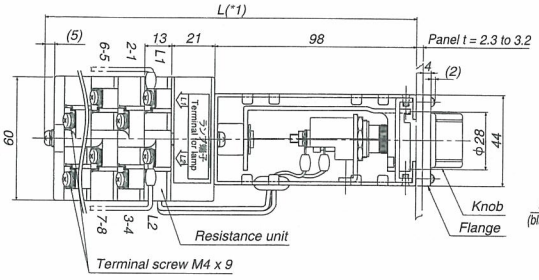
Compact discrepancy switch

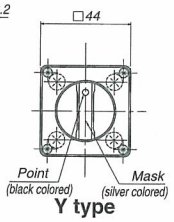
BHLS-1□



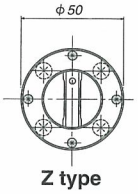


Mounting hole





Y type



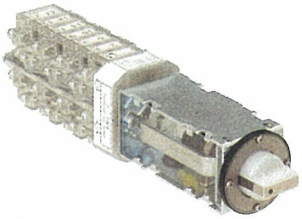
Z type

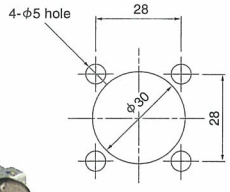
(*1)

No. of units	1	2	3	4	5	6
L(mm)	155	168	181	194	207	220

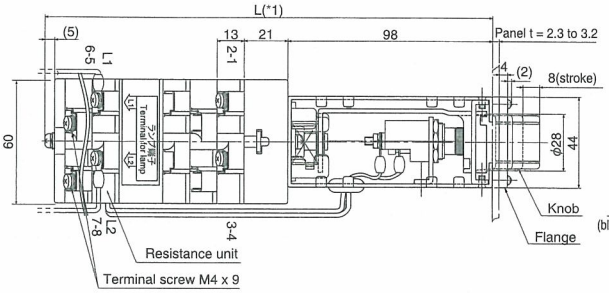
Compact discrepancy switch

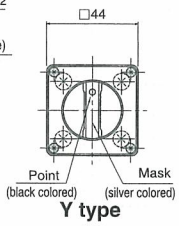
BHLS-2□



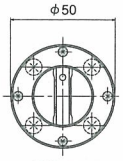


Mounting hole





Y type



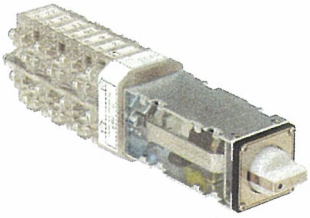
Z type

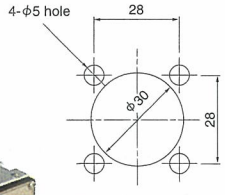
(*1)

	No. of units					
2-point switching contacts	1		2		3	4
Depressing operation contacts	1	2	1	2	1	1
L(mm)	215	241	228	254	241	254

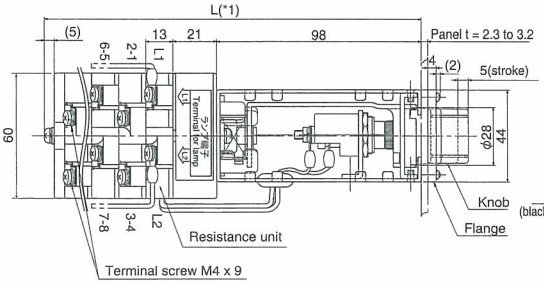
Compact discrepancy switch

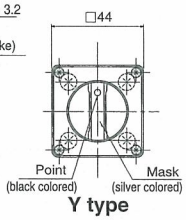
BHLS-3□



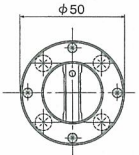


Mounting hole





Y type



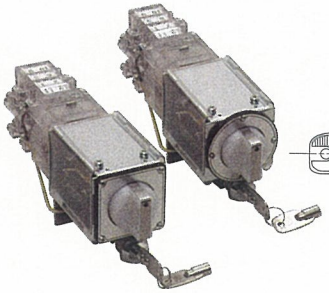
Z type

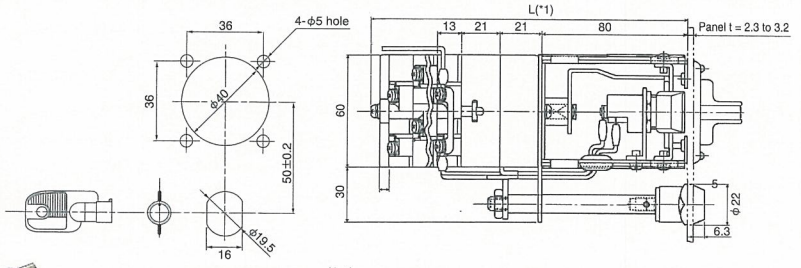
(*1)

No. of units	1	2	3	4	5	6
L(mm)	155	168	181	194	207	220

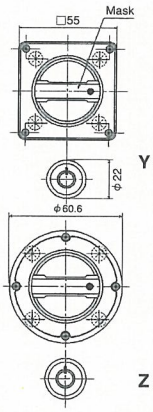
With key lock mechanism

BHLC





Mounting hole



Y type

Z type

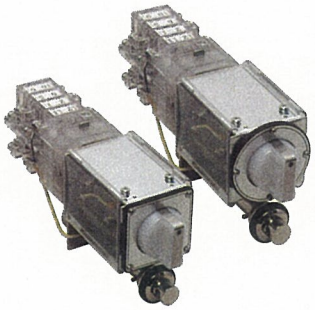
(*1)

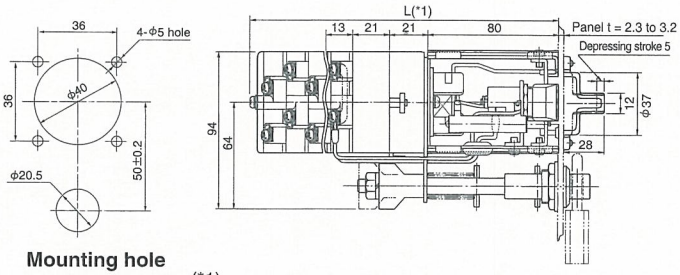
No. of units	1	2	3	4	5	6
L(mm)	158	171	184	197	210	223

*Keys "C-88 and C-110" are manufactured by Takigen.

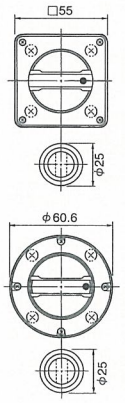
With padlock mechanism

BHLP





Mounting hole



Y type

Z type

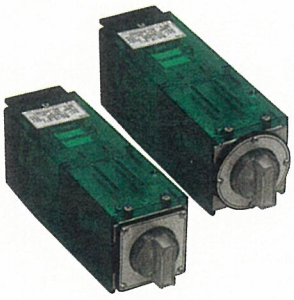
(*1)

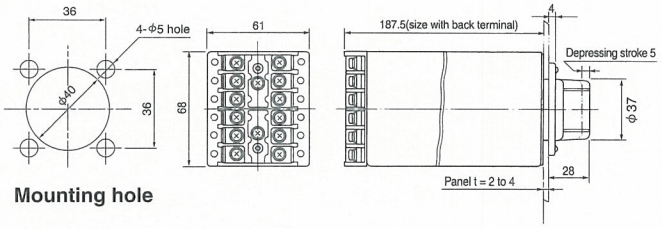
No. of units	1	2	3	4	5	6
L(mm)	158	171	184	197	210	223

*Padlock shall be prepared by the user. (ϕ6 padlock is acceptable)

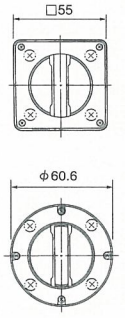
With back rear terminal block

BHL-B





Mounting hole



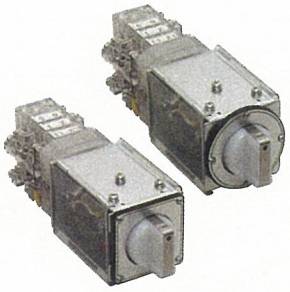
Y type

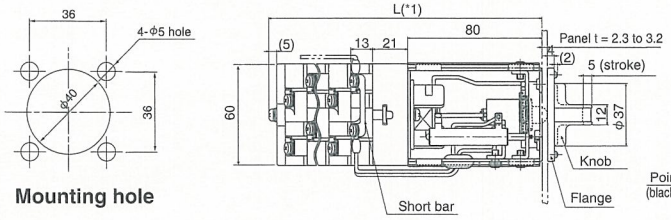
Z type

*Max. unit No. : 3 (6 contacts)

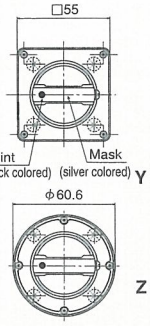
Knob-fixed with housing protective grounding terminal (IP-40) (Panel surface protection type)

BHLFX





Mounting hole

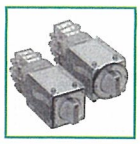


Y type

Z type

(*1)

No. of units	1	2	3	4	5	6
L(mm)	137	150	163	176	189	202



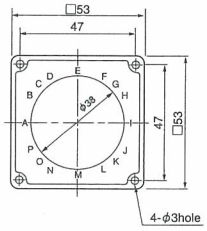
Discrepancy Switch

BHL Type

Accessories

Nameplate (for BHL, BHLC, BHLP, BHL-B and BHLFX)

Square type (Y type)

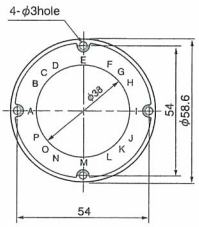


● BHL-NP-L54-Y000

Nameplate number

Aluminum nameplate No.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
L54-Y000	Plain (outline only)															
L54-Y00B	Black plain															
L54-Y01E	OPEN				CLOSE	→CC										OC←
L54-Y02E	IO				IC	C										O
L54-Y03E				O	IO				IC	C						
L54-Y05E	T				C	TC										TT
L54-Y06E				TT	T				C	TC						
L54-Y07E	PUSH	—	—	—	PUSH	→CLOSE										TRIP←
L54-Y08E	OPEN	—	—	—	CLOSE											
L54-Y11E	PUSH	—	—	—	PUSH	—→	CLOSE								OPEN	←—
L54-Y12E	PUSH	—→	CLOSE								OPEN	←—	PUSH			

Round type (Z type)



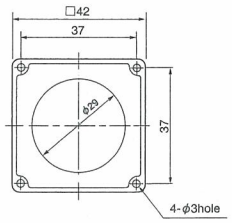
● BHL-NP-L54-Z000

Nameplate number

Aluminum nameplate No.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
L54-Z000	Plain (outline only)															
L54-Z00B	Black plain															
L54-Z01E	OPEN				CLOSE	→CC										OC←
L54-Z02E	OPEN	—	—	—	CLOSE											
L54-Z03E	IO				IC	C										O
L54-Z04E				O	IO				IC	C						
L54-Z05E	CLOSE	—	—	—	OPEN											
L54-Z06E	—OPEN												CLOSE	—	—	
L54-Z07E	PUSH	—	—	—	PUSH	→CLOSE										OPEN←
L54-Z08E				TT	T				C	TC						
L54-Z09E	T				C	TC										TT
L54-Z10E					T				C							
L54-Z11E	PUSH	—	—	—	PUSH	—→	CLOSE						PUSH		OPEN	←—
L54-Z12E	PUSH	—→	CLOSE								OPEN	←—				

Nameplate (for BHLS)

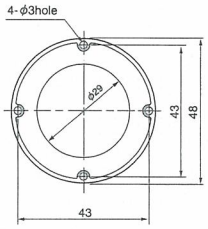
Square type (Y type)



● BHLS-NP D54-000

Plain (outline only)

Round type (Z type)



● BHLS-NP D54-Z000

Plain (outline only)

Accessories

Flange (nameplate) set □:B(N1.5), BG(7.5BG 4/1.5)

- BHL flange set Y □
- BHLS flange set Y □

Supplied screws 1) M4 x 10 countersunk 4 pcs.
2) M2.6 x 4 tapping 4 pcs.

- BHL flange set Z □
- BHLS flange set Z □

Supplied screws 1) M4 x 10 countersunk 4 pcs.
2) M2.6 x 4 tapping 4 pcs.

LED lamp (rated 24 V)

- E-12 LED lamp
  LD-24-YO

- E-12 LED lamp
  LTH-024-12E-AY
  (BHLS only)

Flicker LED lamp

- E-12 LED lamp
  LXF-DC110-AY

Display color: Amber
Power supply voltage

Code	Voltage
DC024	DC24V
DC048	DC48V
DC110	DC100/110V
DC125	DC125V
DC220	DC200/220V

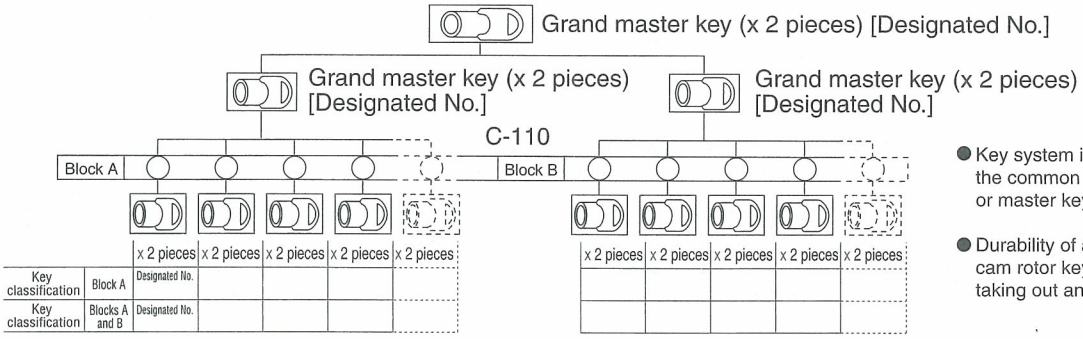
Incandescent lamp

- E-10 panel lamp
  110V2W

Key System

For Cylinder Key C-110

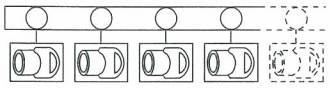
(In case of master key used)



- Key system is decided considering the common use with door lock keys or master keys.
- Durability of a cylinder key and a cam rotor key are 10,000 cydes of taking out and putting in.

For Cylinder Key C-88

(When a master key is not needed)



			x 2 pieces	x 2 pieces	x 2 pieces	x 2 pieces	x 2 pieces
Compatible key	K6510	only 1 type	K6510	K6510	K6510	K6510	--------
Key classification	K6511 to K6520	10 types	K6511	K6512	K6513	K6514	--------

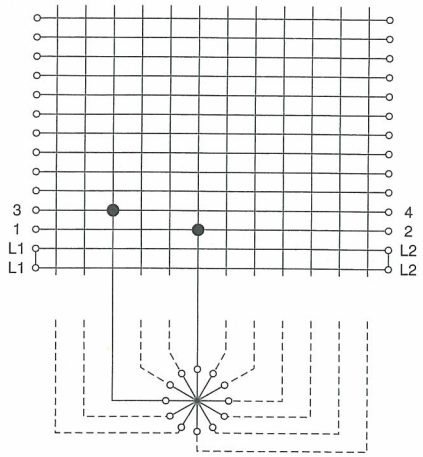
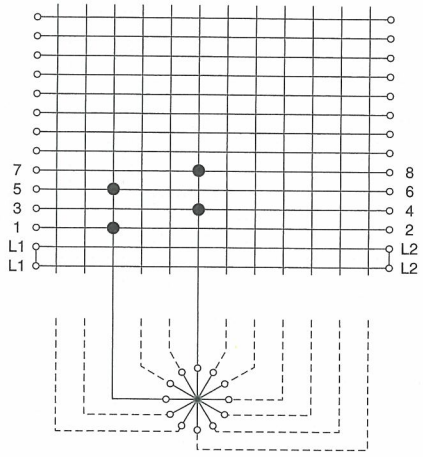
- We will stamp key numbers on your request.

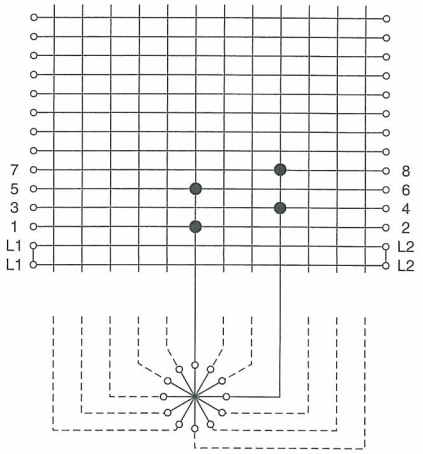
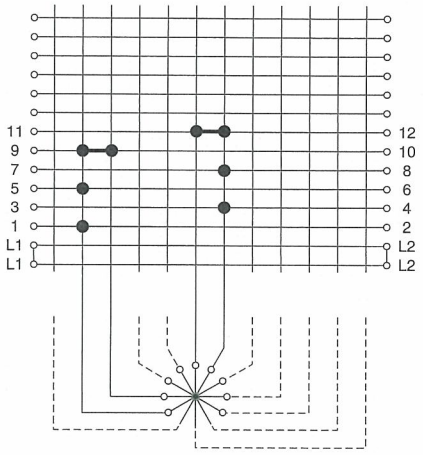
Discrepancy Switch

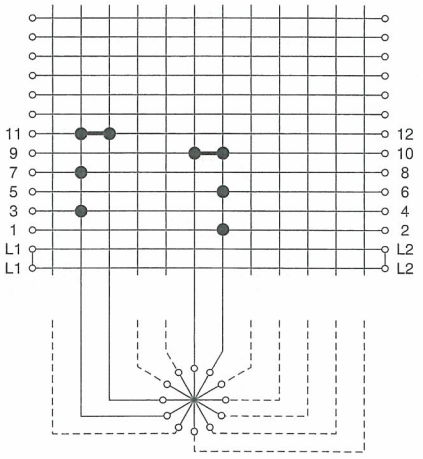
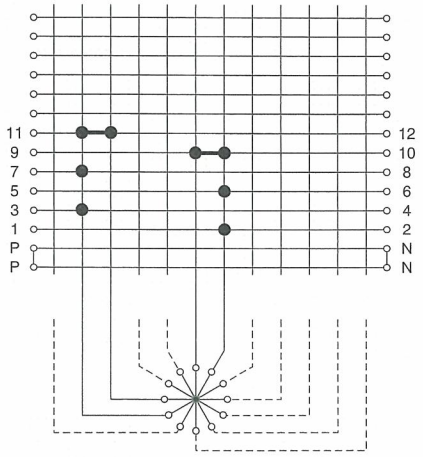
BHL Type

Contact Arrangement Table

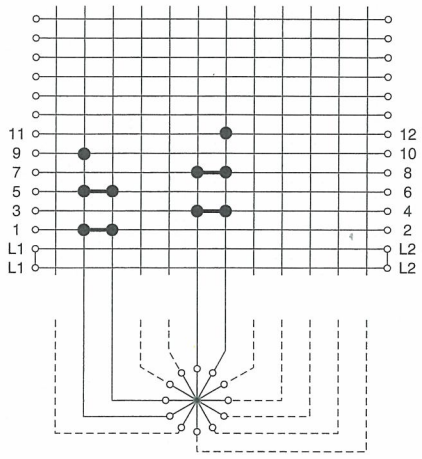
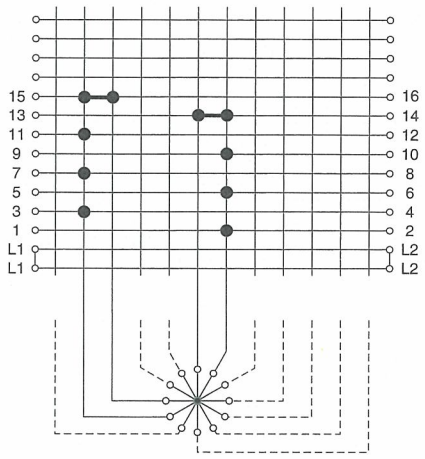
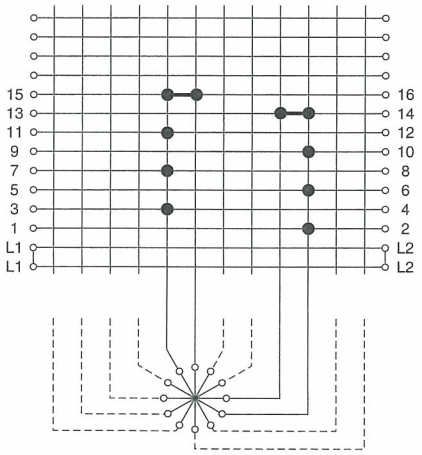
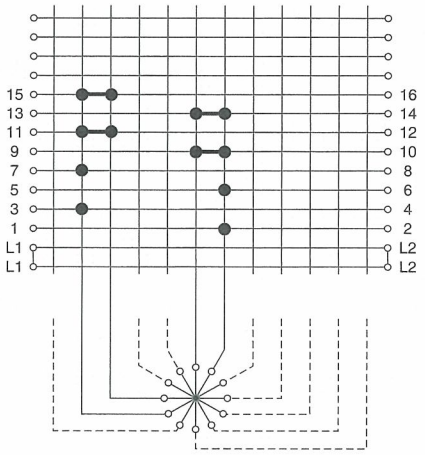
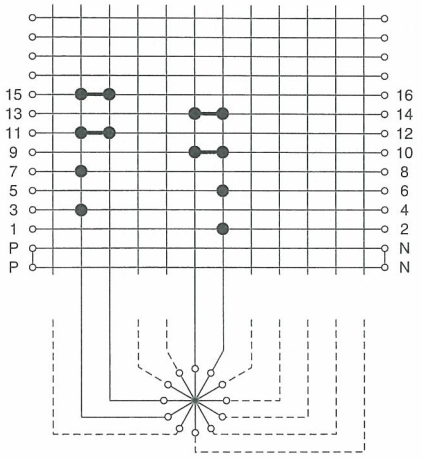
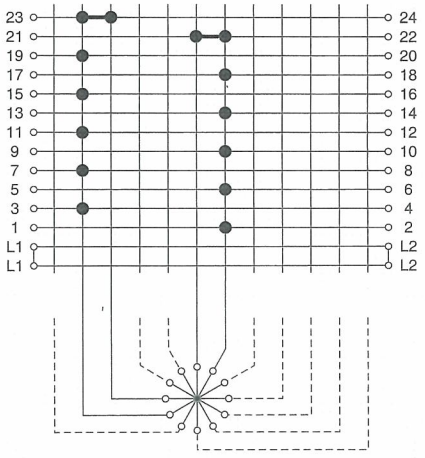
Main contact arrangement table (please contact us for other contacts).

Type	BHL□-1B1131	BHL□-1B2221
Contact arrangement		

Type	BHL□-1E2221	BHL□-3B3101
Contact arrangement		

Type	BHL□-3B3111	BHL□-3B3112
Contact arrangement		

Contact Arrangement Table

Type	BHL□-3B3221	BHL□-3B4111
Contact arrangement		
Type	BHL□-3E4111	BHL□-3B4211
Contact arrangement		
Type	BHL□-3B4212	BHL□-3B6111
Contact arrangement