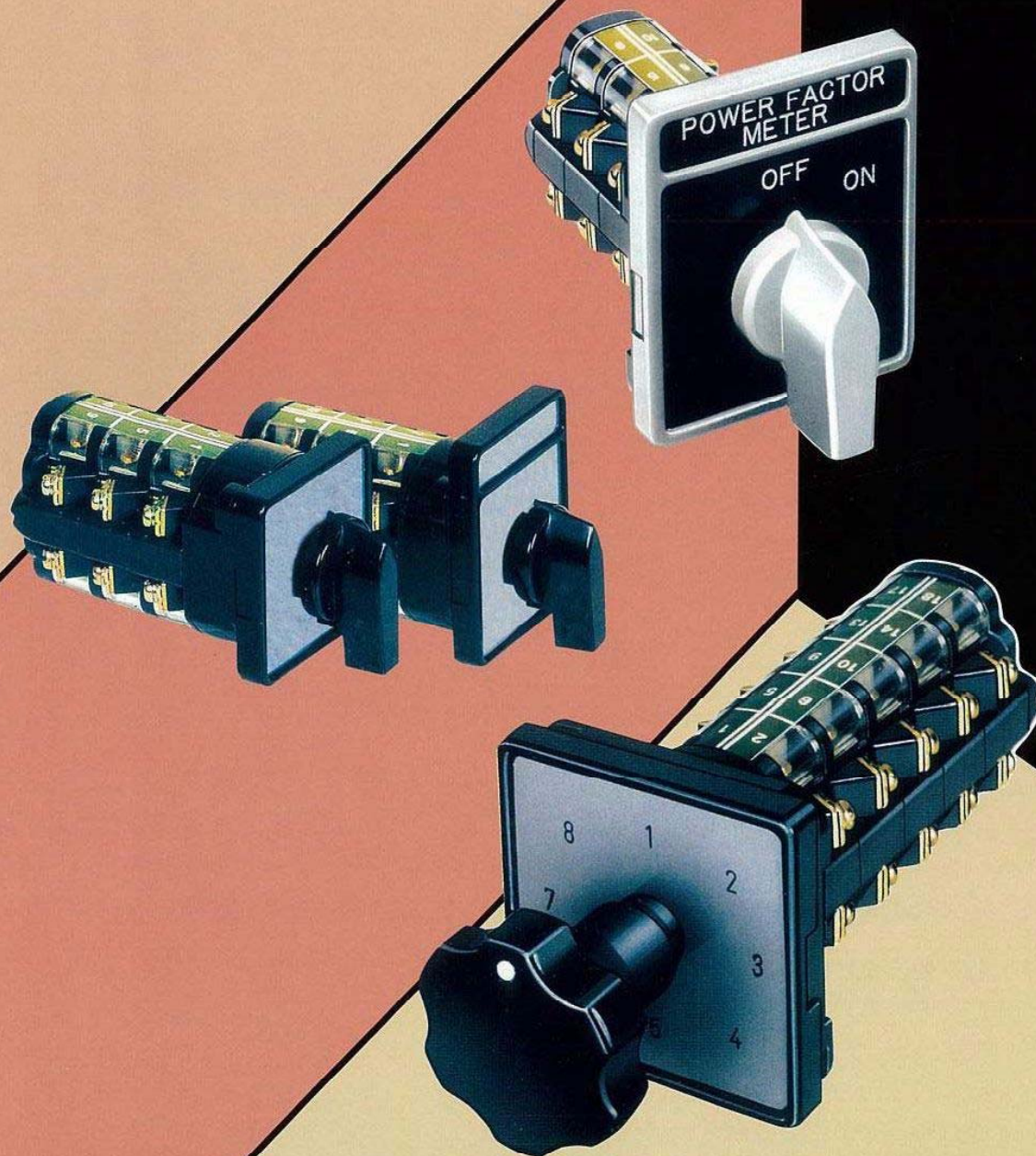


SEIKO
ELECTRIC

TYPE E&S&H CAM SWITCHES



SEIKO
ELECTRIC

SHAFTLESS CAM SWITCHES

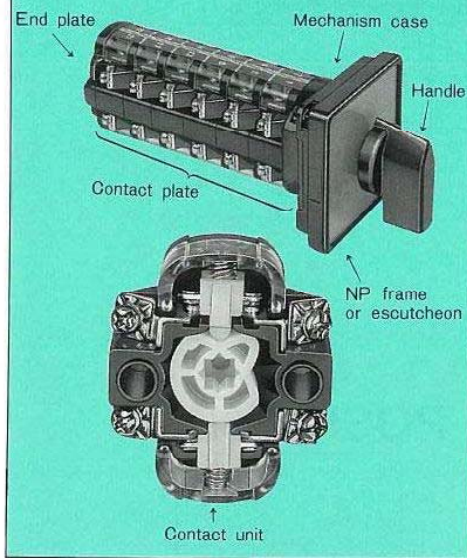
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(No.1 to No.12)	

1

CONSTRUCTION & FEATURES

Construction



Features :

- **Smaller in size** — Required space on the panel is less.
- **Ease to work** — Back wiring system allows works ease, permitted for type "E" to set name plate without screws
- **Light weight** — Type "E" complete one unit weighs only 110grs. Plus 30grs. every added a unit.
- **Transparent cover** — Provided with full-visibility of contact operation.
- **High reliability** — Ensures reliable, accurate operation through silver contacts, added to it, furnished with sliding contact system.
- **Meets with BS codes**
- **UL approved resin** — Provided with slow burning capability.

2

SPECIFICATIONS

Codes applied		BS 4794
Ambient temperature		-5°C to +55°C
Relative humidity		From 45% to 85%
Rated voltage		600V A.C./D.C.
Rated current		16 Amp.
Max. usable wires		2.5mm square
Temperature rise		Less than 30°C at contact, terminal parts (Initial value)
Contact resistance		Less than 50mΩ (Initial value)
Insulation resistance		Over than 100MΩ by 500V megger
Withstanding voltage A.C.		For one min. 2500V AC.
Withstanding impulse voltage		5000V at 1.2×40μs standard wave
Life	Mechanical switching operation times	Over than 300,000 cycles
	Electrical switching operation times	Over than 300,000 cycles at 220V 7A A.C. 0.6 at power factor. Over than 100,000 cycles at 110V 0.6A D.C. L/R 0.007. 2π rad/s 1200 cycles per hour.
Nos. of max. unit		Ten units
Max. Nos. of contacts to open simultaneously	For general use. * hand reset, notch contact system	Six contacts
	Hand reset, lapping notch contact system	Three contacts
	Automatic reset system	Four contacts

*It means the use which not permitted lap of contact to be made.

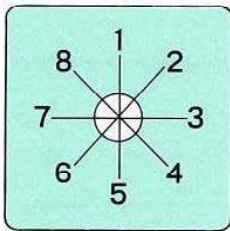
● RATING

Voltage (V)	A C (A) at power factor 0.6	D C (A)	
		Resistance load	Inductive load(L/R 0.007)
24	16	6.5	4
48		3	2
110	10	1	0.6
220	7	0.4	0.24
440	3		
550	2.5		

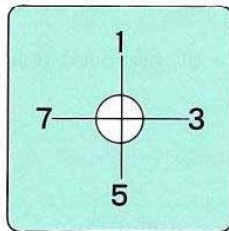
※ Usable minimum voltage & current24V, 50mA

3

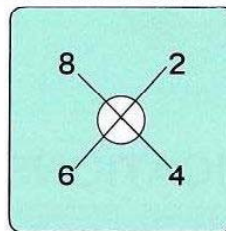
■ MARK OF OPERATION POSITION



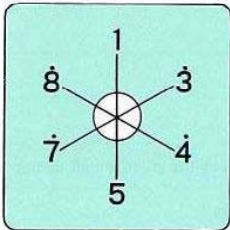
45° notch



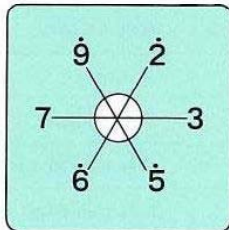
90° notch



90° notch



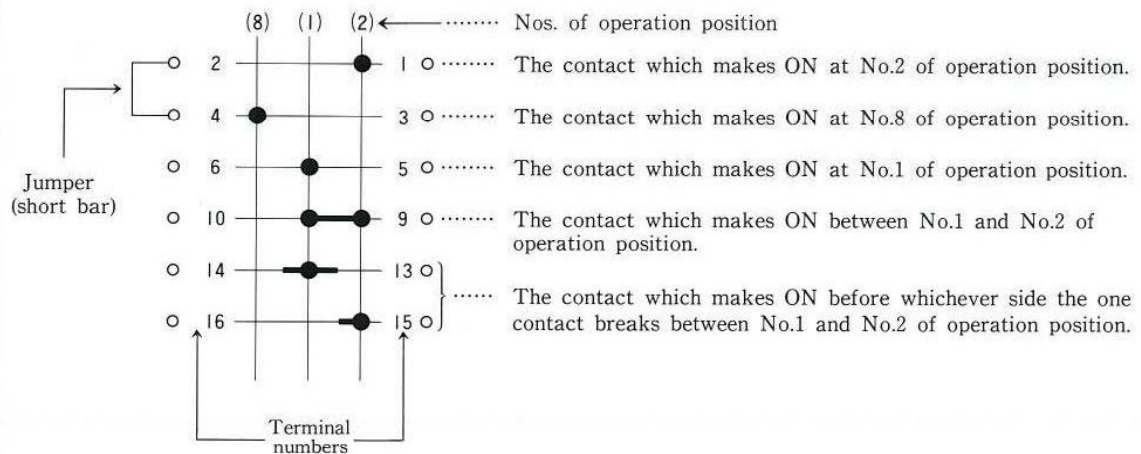
60° notch



60° notch

4

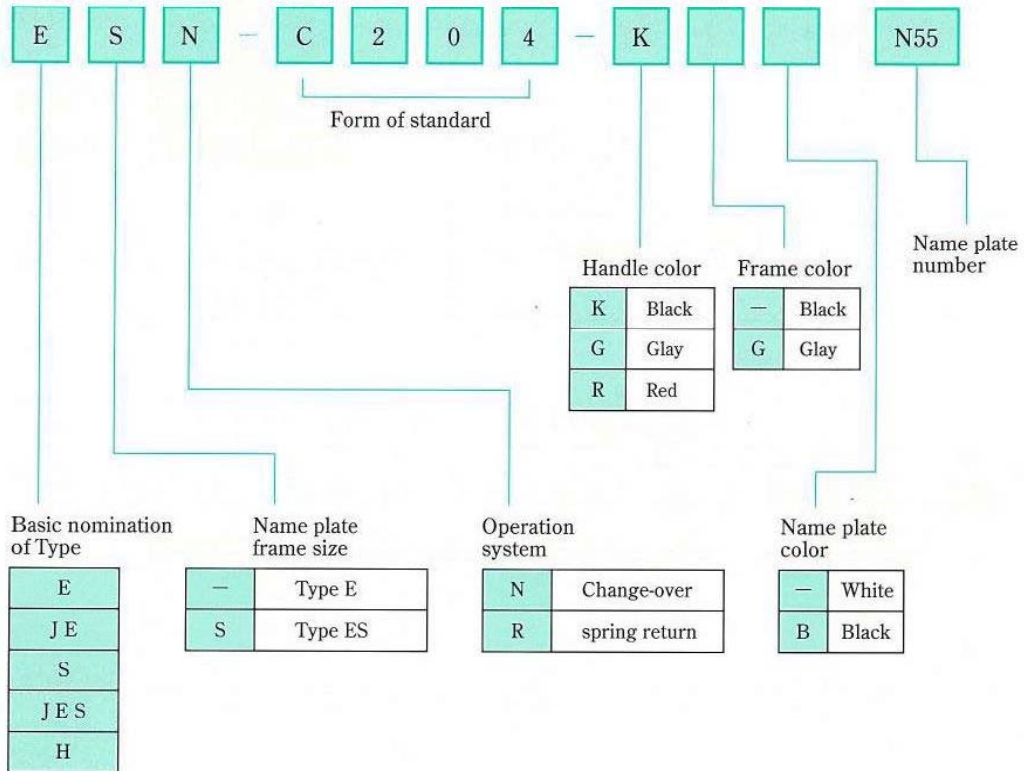
■ EXPRESSION OF CONTACT SEQUENCE



TYPE FORM

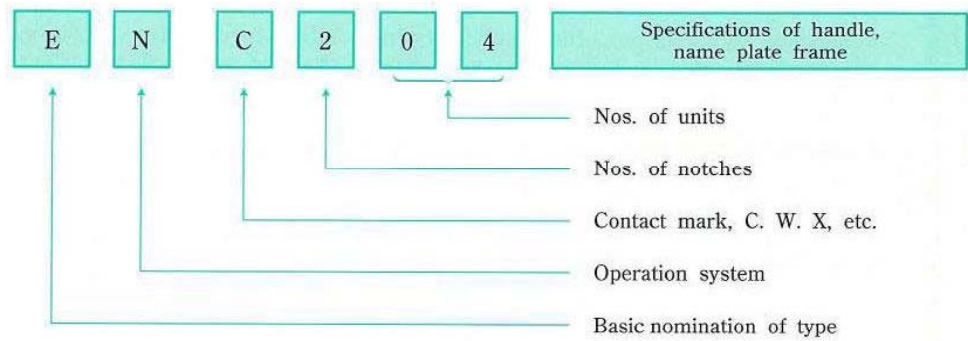
Contact sequences are determined in standard specifications as shown in following from page 11 to page 22.

● Expression of type form

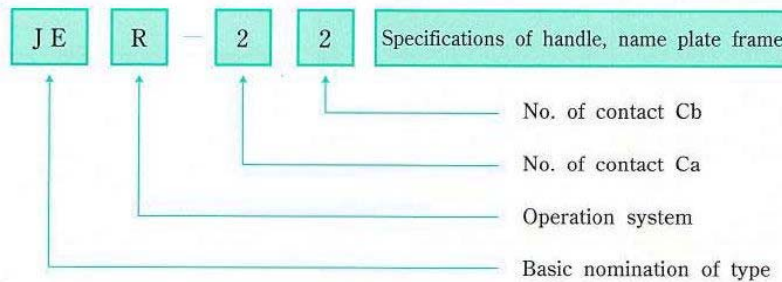


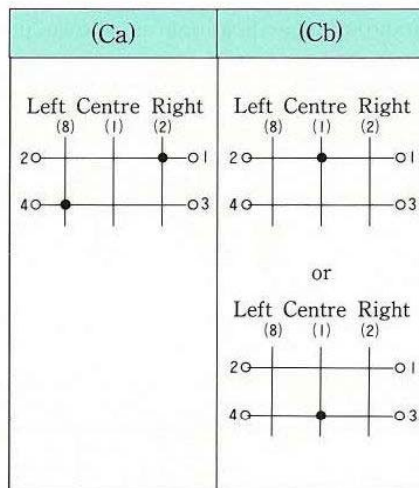
● Expression of type form examples :

① Change-over switch

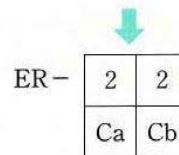
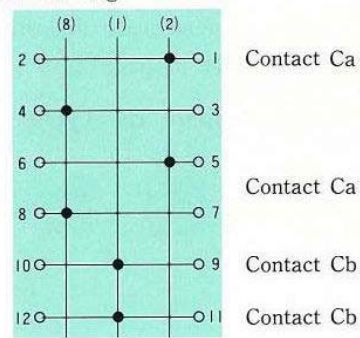


② Spring-return switch





For example: The contact sequence of type ER-22 is as following.



Remarks:

- 1) Type ER-10 is composed of one set of contact Ca and without contact Cb.
- 2) All the contact sequence which be unable to compose of contact Ca & Cb. belong to "X".

③ Non standard (The contact sequences which are not given in the catalogue)



- Contact mark (Non standard contact sequences which are not given the cat)
- Nos. of units
- Operation system
- Basic nomination of type

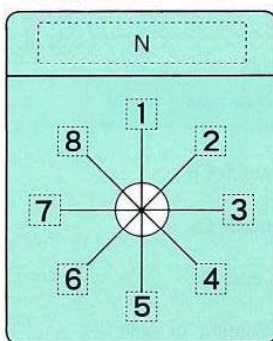
6 NAME PLATE

When specifying letters, the numbers corresponding to operation position are predetermined, so the numbers and the letters that you require shall be specified according to below figures.

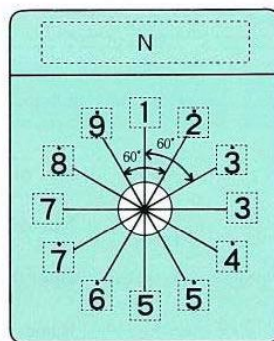
● Kinds of nameplate

Color of NP.	Letter	Material
White	Black	Aluminum
Black	White	

● Type E · ES

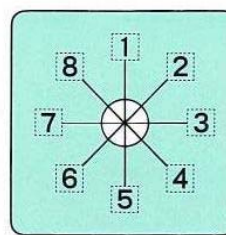


45° & 90° notch

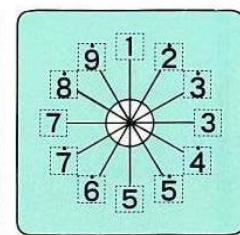


60° notch

● Type E-J · ES-J

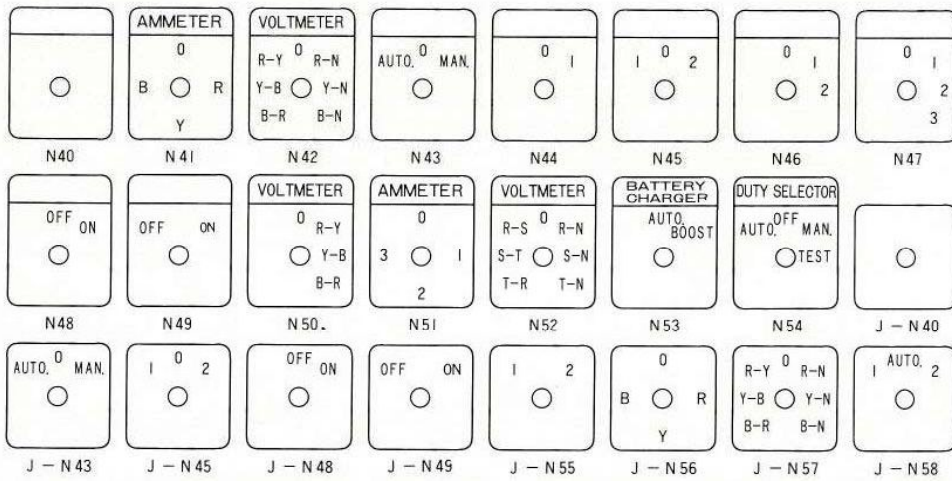


45° & 90° notch



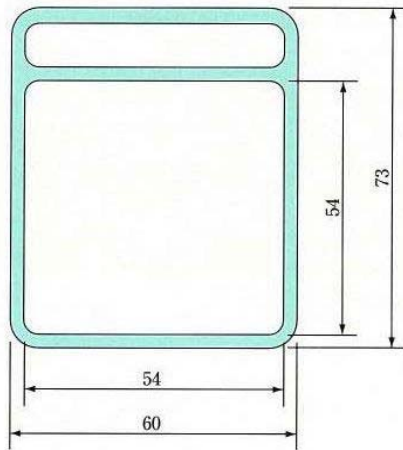
60° notch

● Standard name plate

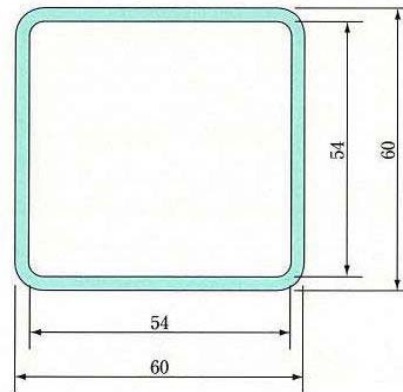


7

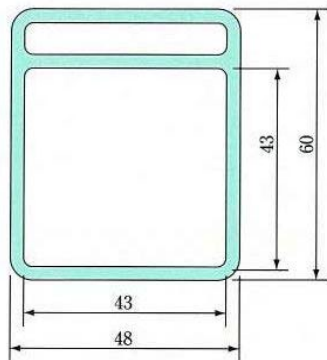
NAME PLATE FRAME



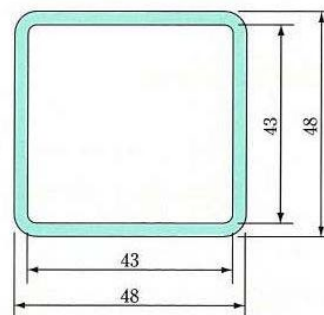
Type E



Type J E




Type E S



Type J E S

HANDLE

Appearance	Handle name	Mark	Color	
	Needle	Y	K	Black
			G	Gray
			R	Red

COMPARISON BETWEEN TYPE E(S.H) & TYPE B(A) OF CONTROL SWITCHES

1. Operation system

N Chang-over system45°, 90°

R Spring return system45°

When utilizing the control switches of key system, push/pull, residual contact, water proof & for one side is notch hand reset system, for another is automatic return, wherein type A, B & D control switches shall be applied, because type E, S & H of the five systems above mentioned are not manufactured.

2. Mounting system

The control switches are smaller, and light weight than type B control switches, so installation to the panel is available for only two screws.

Refer to the fitting figure at page 8.

3. Mark plate

Fitting way is available for adhesion system.

Numbers of terminal are in series numbers in such manner of 1, 2, 3

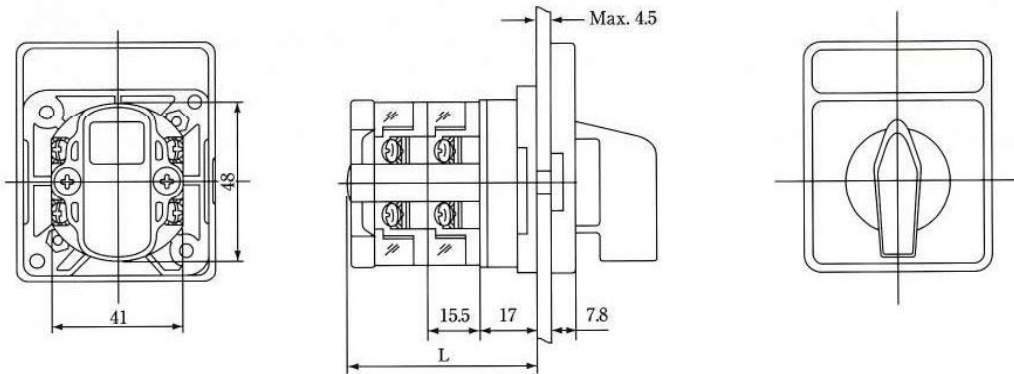
4. Contact sequences

Please contact us your needs before placing order when required the sequences except the standard sequences shown from page 11 to 22.

10

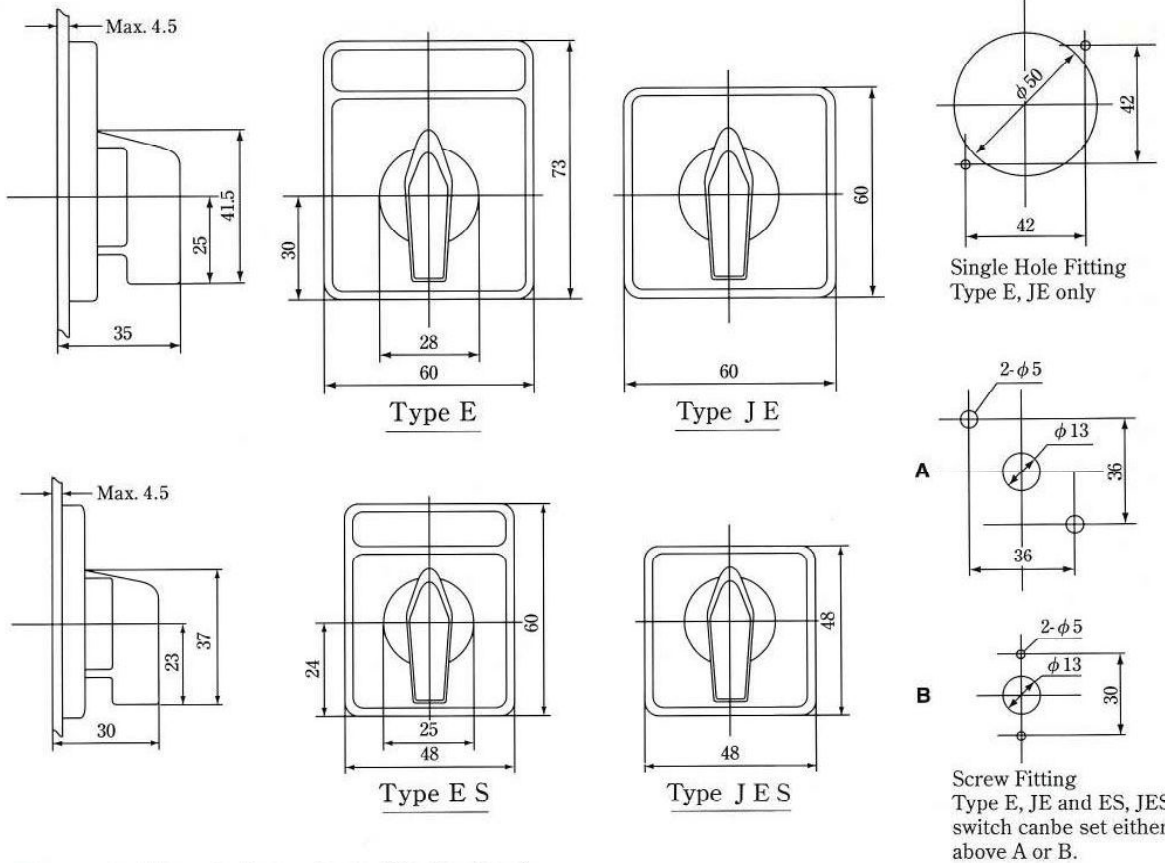
DIMENSIONS

<TYPE E>

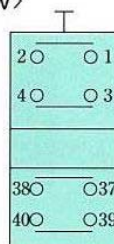


Nos, of unit	1	2	3	4	5	6	7	8	9	10
Dimension L	40	55.5	71	86.5	102	117.5	133	148.5	164	179.5

The minimum mounting pitch is 65mm at 3-units and less.



● Layout of terminal numbers <Back view>

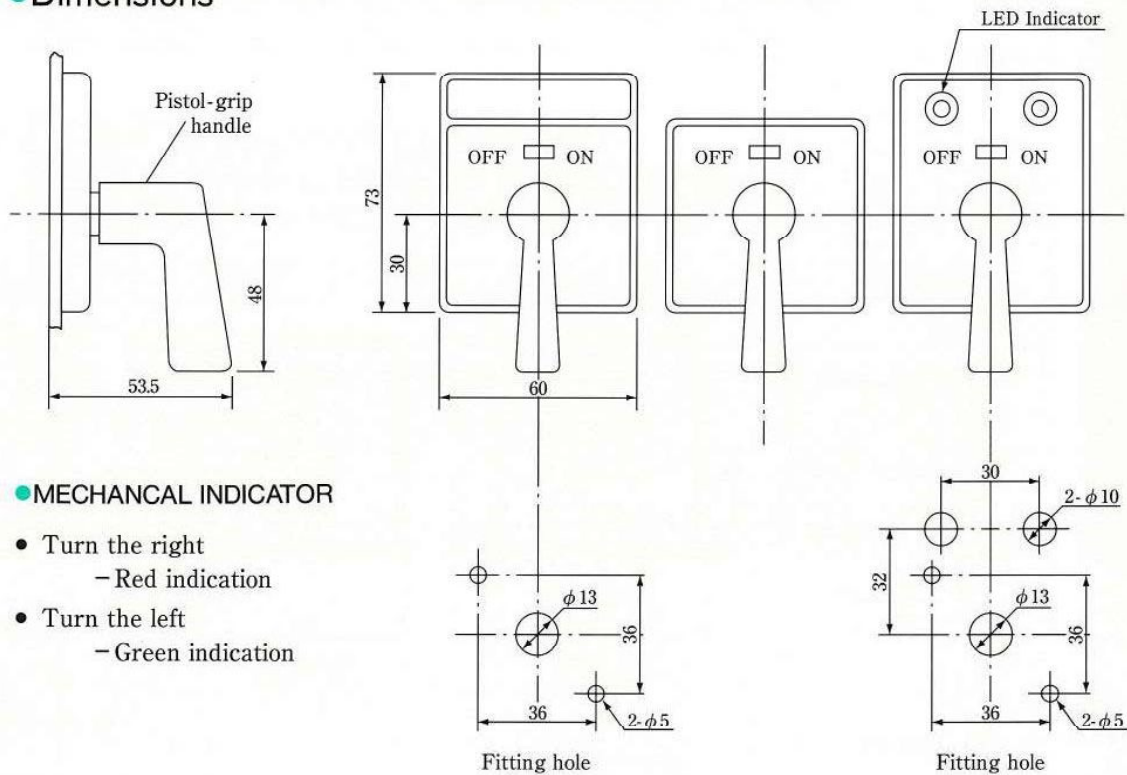


INDICATOR DEVICE

Function

- Indicator on control switches with spring return are designed to show the last position of the switch.
- If the handle is turned either to the right or to the left, a GREEN or RED flag appears in the window above the handle.
- It is commonly used in Circuit Breaker control switches or Motor control.
- LED Indicators available as an option.

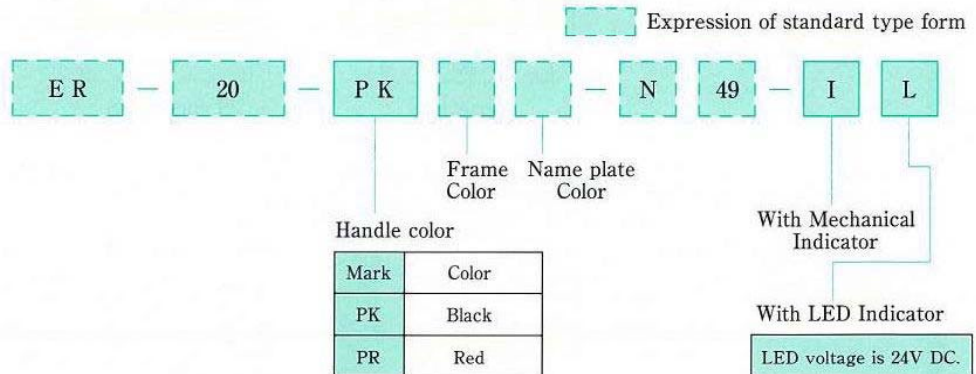
Dimensions



MECHANICAL INDICATOR

- Turn the right
- Red indication
- Turn the left
- Green indication

How to order

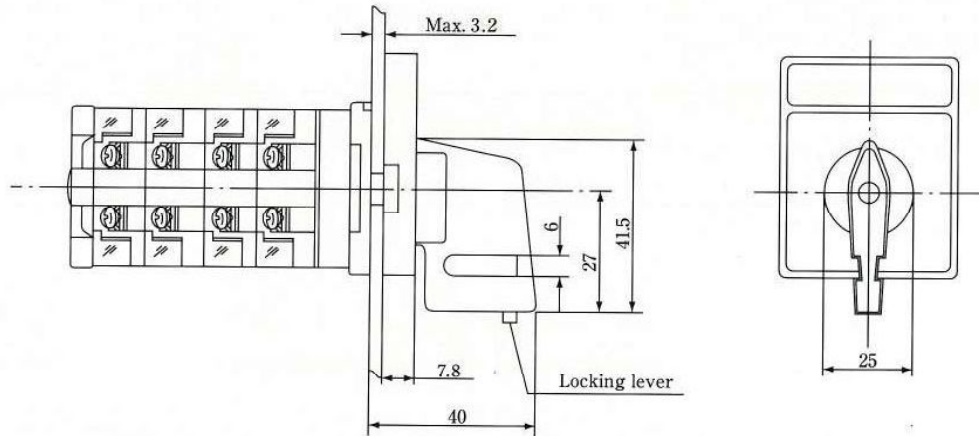


PADLOCK DEVICE (TYPE E & ES)

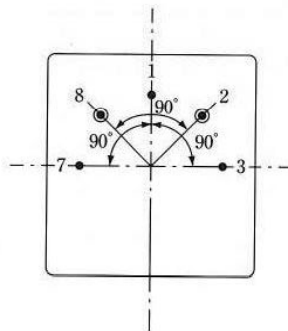
● Function

- Padlock switch can apply switches of change over and spring return.
- Padlock position is generally only one phase, but it can be setting maximum three position.

● Dimensions



● Lock position



Operation system	Lock position
Change over	● 2 or 8 ● 1-3 and 7
Spring return	● 1

● How to order

Expression of standard type form

ESN L 8 - C 2 0 2 - R [] [] - N 49

with pad Lock

Locking position

Frame Color

Name plate Color

Handle color

Mark	Handle color	Locking lever
K	Black	Red
R	Red	Yellow

Name plate	Type form	Prices	Contact sequence & how to connect for meter
<p>N 60 N 61</p>	HN-A		
<p>N 41 N 62 N 51</p>	SN-3AC		
<p>N 60 N 61</p>	EN-5AB		
<p>N 63 N 64</p>	EN-6AD		
<p>N 65 N 66 N 67</p>	EN-6AE		
<p>N 68 N 69 N 70</p>	EN-7AB		

Name plate	Type form	Prices	Contact sequence & how to connect for meter
<p>N 71 N 40 J - N 44 J - N 40</p>	EN-1AG		
<p>N 72 N 40 J - N 46 J - N 40</p>	EN-2AG		
<p>N 73 N 40 J - N 47 J - N 40</p>	EN-3AG		
<p>N 74 N 40 J - N 74 J - N 40</p>	EN-4AG		
<p>N 75 N 40 J - N 75 J - N 40</p>	EN-5AG		
<p>N 76 N 40 J - N 76 J - N 40</p>	EN-6AG		

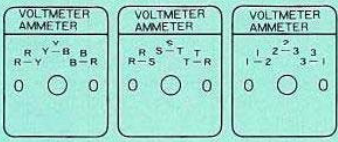
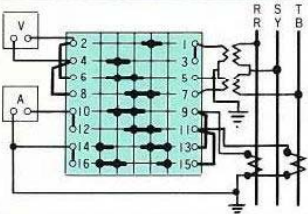
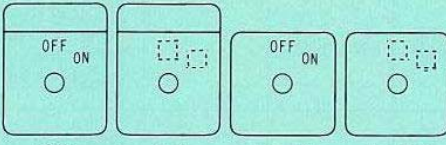
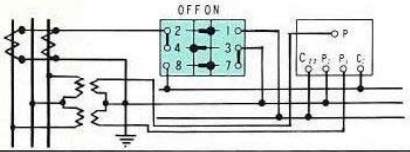
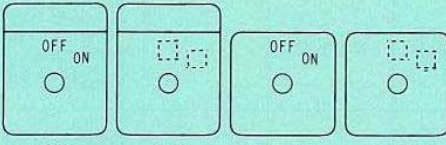
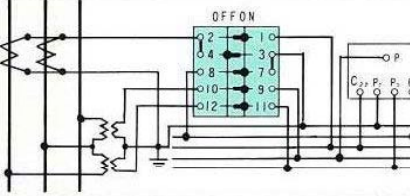
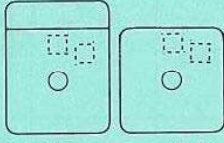
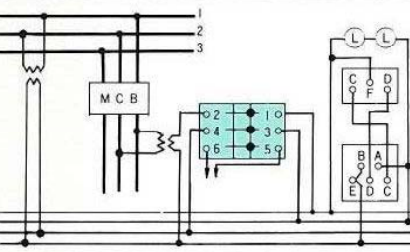
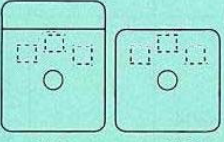
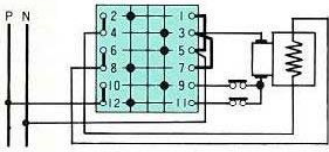
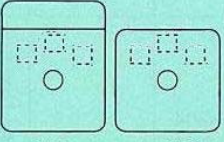
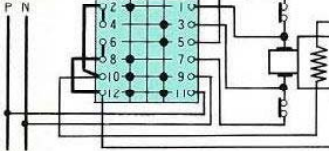
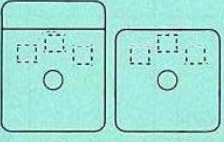
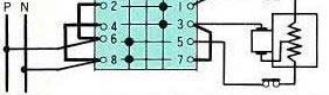
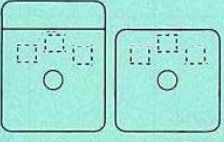
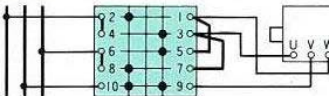
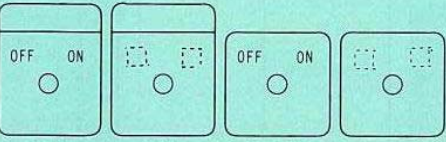
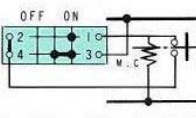
Remark:

Since N-40 & J-N40 are non-letter name plate, please specify the letters to be given within bracket.

Tables of contact standard sequence

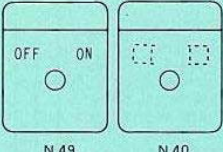
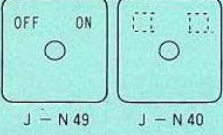
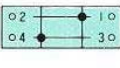
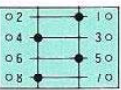
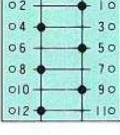
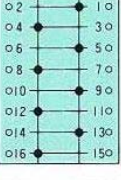
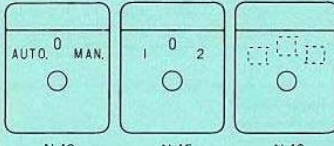
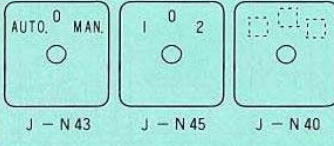
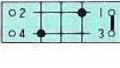
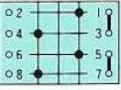
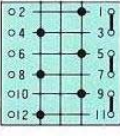
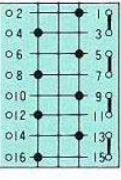
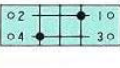
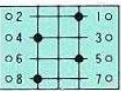
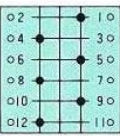
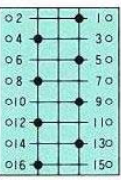
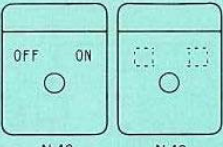
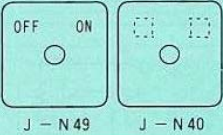
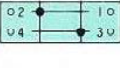
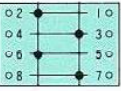
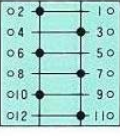
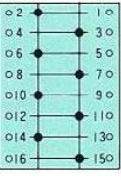
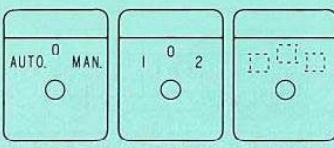
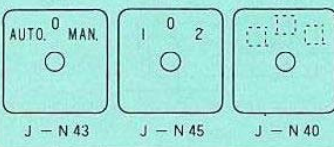
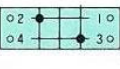

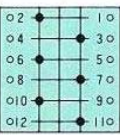
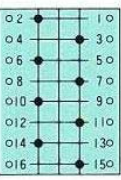
No.3

Name plate	Type form	Prices	Contact sequence & how to connect for meter
<p>AMMETER</p> <p>N 77 N 40 J - N 77 J - N 40</p>	EN-7AG		
<p>VOLTMETER</p> <p>N 78 N 79 J - N 78 J - N 79</p>	HN-V		
<p>VOLTMETER</p> <p>N 80 N 81 J - N 80 J - N 81</p>	EN-2VN		
<p>VOLTMETER</p> <p>N 42 N 52 J - N 42 J - N 52</p>	SN-3VC		
<p>VOLTMETER</p> <p>N 82 N 83 J - N 82 J - N 83</p>	EN-4VB		
<p>VOLTMETER</p> <p>N 84 N 85 J - N 84 J - N 85</p>	EN-4VD		
<p>VOLTMETER</p> <p>N 86 N 87 J - N 86 J - N 87</p>	EN-5VN		

Name plate	Type form	Prices	Contact sequence & how to connect for meter
 <p>N 88 N 89 N 90</p>	HN-VA		
 <p>N 44 N 40 J - N 44 J - N 40</p>	EN-2P		
 <p>N 44 N 40 J - N 44 J - N 40</p>	EN-3P		
 <p>N 40 J - N 40</p>	EN-2B		
 <p>N 40 J - N 40</p>	ER-3RS		
 <p>N 40 J - N 40</p>	ER-3RT		
 <p>N 40 J - N 40</p>	ER-2G		
 <p>N 40 J - N 40</p>	ER-3R		
 <p>N 49 N 40 J - N 49 J - N 40</p>	ER-1S		

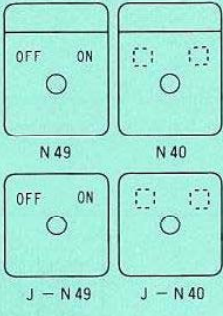
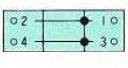
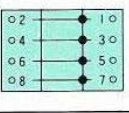
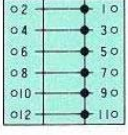
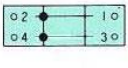
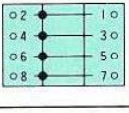
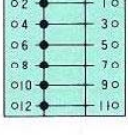
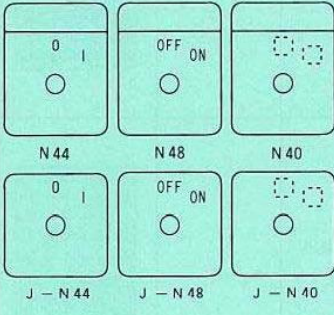
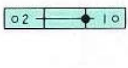
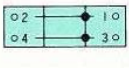
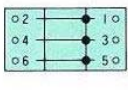
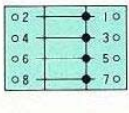
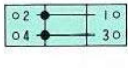
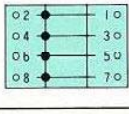
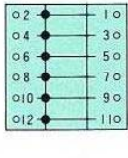
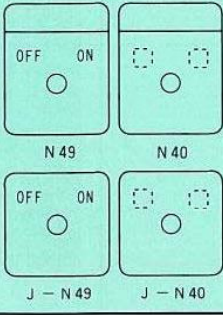
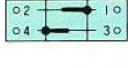
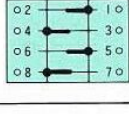
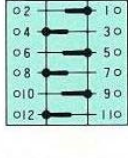
Tables of contact standard sequence

No.5

Name plate	Type form	Prices	Contact sequences	Type form	Prices	Contact sequences
 <p>N 49 N 40</p>  <p>J - N 49 J - N 40</p>	EN-C201			EN-C202		
	EN-C203			EN-C204		
 <p>N 43 N 45 N 40</p>  <p>J - N 43 J - N 45 J - N 40</p>	EN-C301J			EN-C302J		
	EN-C303J			EN-C304J		
	EN-C301			EN-C302		
	EN-C303			EN-C304		
 <p>N 49 N 40</p>  <p>J - N 49 J - N 40</p>	EN-H201			EN-H202		
	EN-H203			EN-H204		
 <p>N 43 N 45 N 40</p>  <p>J - N 43 J - N 45 J - N 40</p>	EN-H301			EN-H302		
	EN-H303			EN-H304		

Tables of contact standard sequence

No.6

Name plate	Type form	Prices	Contact sequences	Type form	prices	Contact sequences
	EN-W201			EN-W202		
	EN-W203					
	EN-V201			EN-V202		
	EN-V203					
	EN-D201P			EN-D201		
	EN-D202P			EN-D202		
	EN-E201			EN-E202		
	EN-E203					
	EN-R201			EN-R202		
	EN-R203					

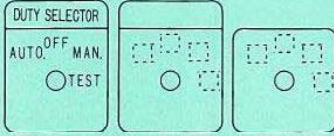
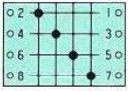
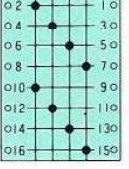
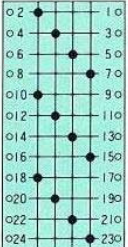
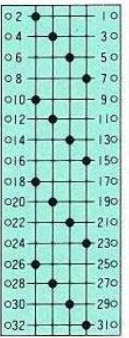
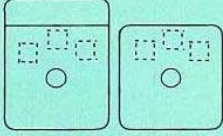

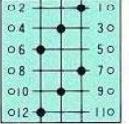
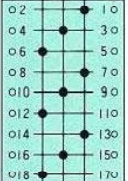
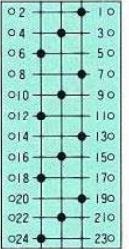
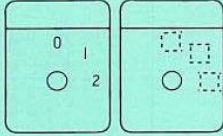

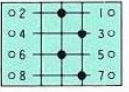
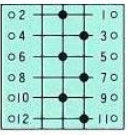
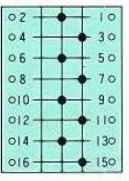
Tables of contact standard sequence

No.7

Name plate	Type form	Prices	Contact sequences	Type form	Prices	Contact sequences
<p> N 43 </p> <p> N 45 </p> <p> N 40 </p> <p> J - N 43 </p> <p> J - N 45 </p> <p> J - N 40 </p>	EN-R301			EN-R302		
	EN-R303					
	EN-X302			EN-X303		
EN-X305			EN-X306			
EN-X402			EN-X404			
EN-X406			EN-X408			

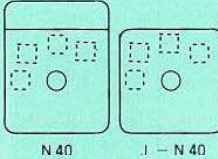

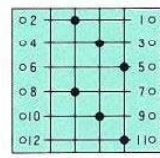
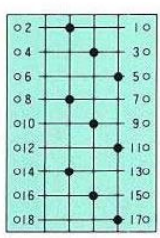
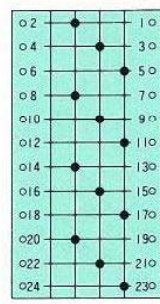
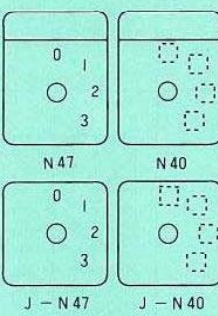
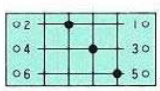
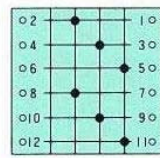
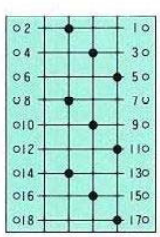
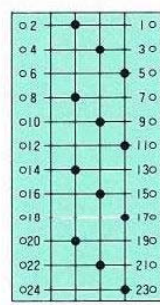
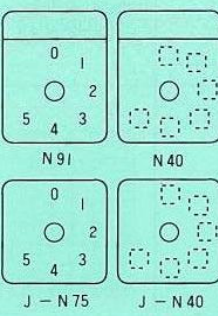
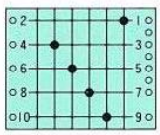
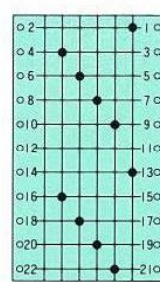
Tables of contact standard sequence

No.8

Name plate	Type form	Prices	Contact sequences	Type form	Prices	Contact sequences
 N 54 N 40 J - N 40	EN-S402			EN-S404		
	EN-S406			EN-S408		
 N 40 J - N 40	EN-Z302			EN-Z303		
	EN-Z305			EN-Z306		
 N 46 N 40	EN-G301			EN-G302		
	EN-G303			EN-G304		

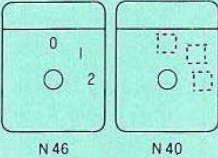
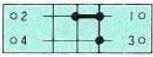

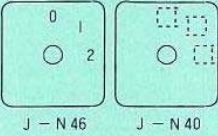
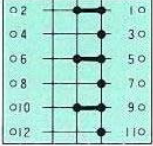
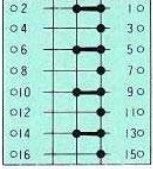
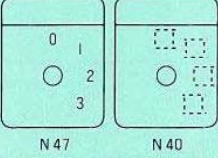
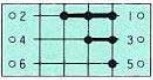
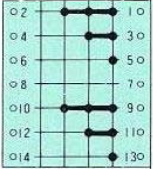
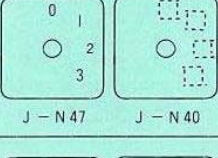
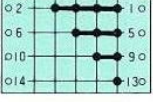
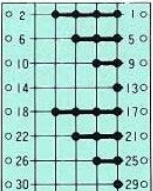
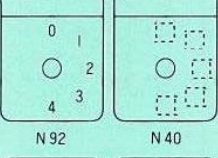
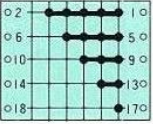
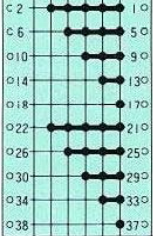

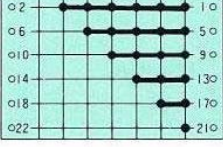
Tables of contact standard sequence

No.9

Name plate	Type form	Prices	Contact sequences	Type form	Prices	Contact sequences
 <p>N 40 J - N 40</p>	EN-M402			EN-M403		
	EN-M405			EN-M406		
 <p>N 47 N 40 J - N 47 J - N 40</p>	EN-G402			EN-G403		
	EN-G405			EN-G406		
 <p>N 91 N 40 J - N 75 J - N 40</p>	EN-G603			EN-G606		

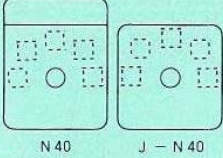
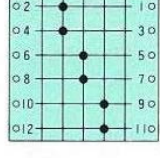
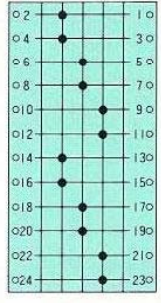
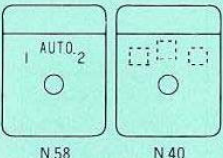
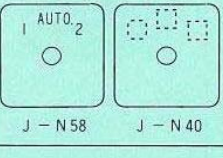
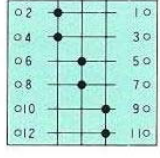
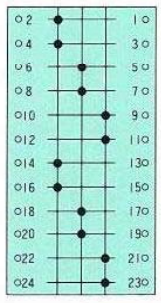
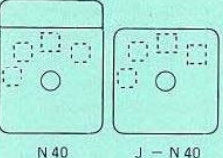
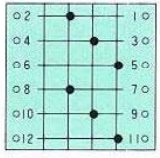
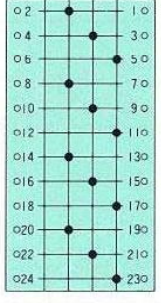
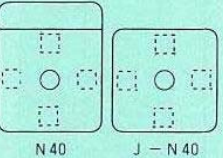
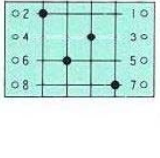
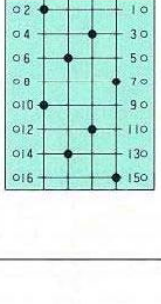
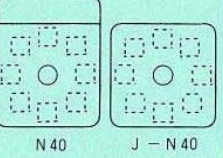
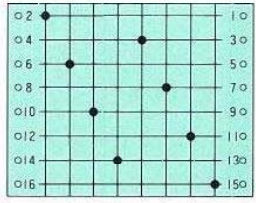
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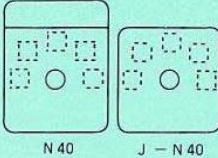
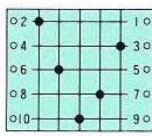
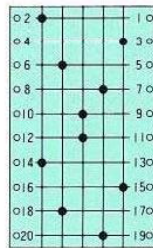
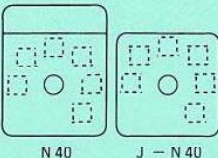
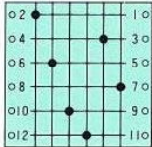
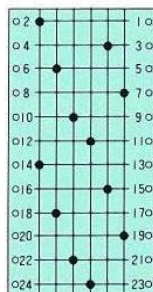
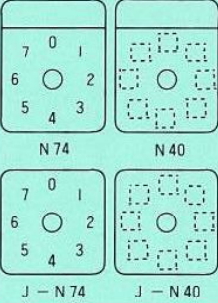
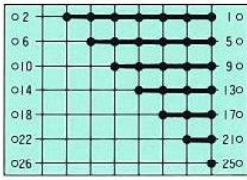
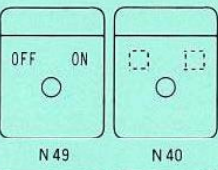
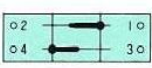
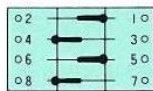
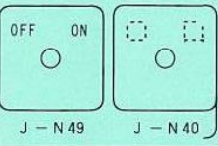
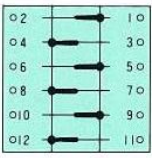
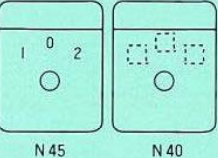
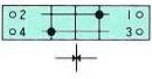
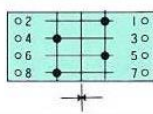
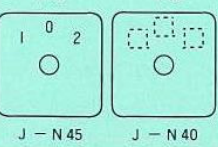
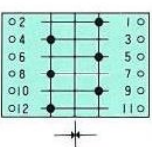
No.10

Name plate	Type form	Prices	Contact sequences	Tepe form	Prices	Contact sequences
 <p>N 46 N 40</p>	EN-L301			EN-L302		
 <p>J - N 46 J - N 40</p>	EN-L303			EN-L304		
 <p>N 47 N 40</p>	EN-L402			EN-L404		
 <p>N 92 N 40</p>	EN-L504			EN-L508		
 <p>N 91 N 40</p>	EN-L605			EN-L610		
 <p>N 93 N 40</p>	EN-L706					

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Name plate	Type form	Prices	Contact sequences	Type form	Prices	Contact sequences
 <p>N 40 J - N 40</p>	EN-J503			EN-J506		
 <p>N 58 N 40</p>  <p>J - N 58 J - N 40</p>	EN-Q303			EN-Q306		
 <p>N 40 J - N 40</p>	EN-K403			EN-K406		
 <p>N 40 J - N 40</p>	EN-U402			EN-U404		
 <p>N 40 J - N 40</p>	EN-U804					

Name plate	Type form	Prices	Contact sequences	Type form	Prices	Contact sequences
 <p>N 40 J - N 40</p>	EN-X503			EN-X505		
 <p>N 40 J - N 40</p>	EN-X603			EN-X606		
 <p>N 74 N 40 J - N 74 J - N 40</p>	EN-L807					
 <p>OFF ON N 49 N 40</p>	EN-1T			EN-2T		
 <p>OFF ON J - N 49 J - N 40</p>	EN-3T					
 <p>N 45 N 40</p>	ER-10			ER-20		
 <p>J - N 45 J - N 40</p>	ER-30			ER-40		