

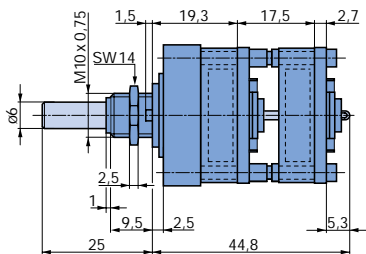
Rotary Switches Type 04

- 24 position switch
- life expectancy > 25 000 switching cycles
- steel spindle-shaft and metal bush for rugged applications
- modular system allows easy adaptation of standard products
- gold flash contact standard



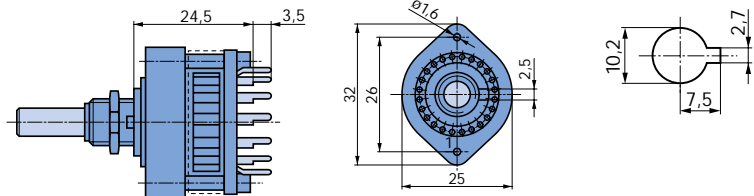
With solder eyelets

SW = key spanner

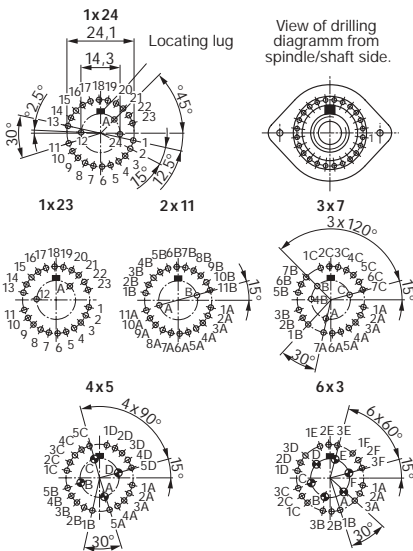


With solder pins for PCB mounting

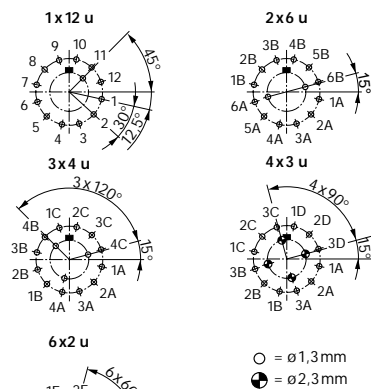
Front panel cut out



Drilling diagram for indexing angle 15°



Drilling diagram for indexing angle 30°









Possible modifications on request

- special type of shaft (length, diameter, form)
- special torque
- waterproof
- special end stop
- shortened bush
- hollow shaft/inner shaft







Stop screws M 1,4 (package of 10 pieces)	4124-21
Stop screws M 1,4 (package of 100 pieces)	4124-20
Bushing Nut (package of 10 pieces)	4124-41

Indexing angle 15°, shorting (non-shorting on request)

Contact arrangement	Construction	Function (Pole x Position)	with solder eyelets		with pins for PCB	
			gold flash	gold 3 µm	gold flash	gold 3 µm
	1—H	1 x 24 o.A.	04-1100	04-1103	04-1100-20	04-1103-20
	2—HH	2 x 24 o.A.	04-2100	04-2103	—	—
	3—HHH	3 x 24 o.A.	04-3100	04-3103	—	—
	4—HHHH	4 x 24 o.A.	04-4100	04-4103	—	—
	1—H	1 x 24	04-1130	04-1133	04-1130-20	04-1133-20
	2—HH	2 x 24	04-2130	04-2133	—	—
	3—HHH	3 x 24	04-3130	04-3133	—	—
	4—HHHH	4 x 24	04-4130	04-4133	—	—
	1—H	2 x 11	04-1210	04-1213	04-1210-20	04-1213-20
	2—HH	4 x 11	04-2210	04-2213	—	—
	3—HHH	6 x 11	04-3210	04-3213	—	—
	4—HHHH	8 x 11	04-4210	04-4213	—	—
	1—H	3 x 7	04-1370	04-1373	04-1370-20	04-1373-20
	2—HH	6 x 7	04-2370	04-2373	—	—
	3—HHH	9 x 7	04-3370	04-3373	—	—
	4—HHHH	12 x 7	04-4370	04-4373	—	—
	1—H	4 x 5	04-1450	04-1453	04-1450-20	04-1453-20
	2—HH	8 x 5	04-2450	04-2453	—	—
	3—HHH	12 x 5	04-3450	04-3453	—	—
	4—HHHH	16 x 5	04-4450	04-4453	—	—
	1—H	6 x 3	04-1630	04-1633	04-1630-20	04-1633-20
	2—HH	12 x 3	04-2630	04-2633	—	—
	3—HHH	18 x 3	04-3630	04-3633	—	—
	4—HHHH	24 x 3	04-4630	04-4633	—	—

packing unit : 10 pieces

Indexing angle 30°, non-shorting

Contact arrangement	Construction	Function (Pole x Position)	with solder eyelets		with pins for PCB	
			gold flash	gold 3 µm	gold flash	gold 3 µm
	1—H	1 x 12 u.o.A.	04-1101	04-1104	04-1101-20	04-1104-20
	2—HH	2 x 12 u.o.A.	04-2101	04-2104	—	—
	3—HHH	3 x 12 u.o.A.	04-3101	04-3104	—	—
	4—HHHH	4 x 12 u.o.A.	04-4101	04-4104	—	—
	1—H	1 x 12 u.	04-1121	04-1124	04-1121-20	04-1124-20
	2—HH	2 x 12 u.	04-2121	04-2124	—	—
	3—HHH	3 x 12 u.	04-3121	04-3124	—	—
	4—HHHH	4 x 12 u.	04-4121	04-4124	—	—
	1—H	2 x 6 u.	04-1261	04-1264	04-1261-20	04-1264-20
	2—HH	4 x 6 u.	04-2261	04-2264	—	—
	3—HHH	6 x 6 u.	04-3261	04-3264	—	—
	4—HHHH	8 x 6 u.	04-4261	04-4264	—	—
	1—H	3 x 4 u.	04-1341	04-1344	04-1341-20	04-1344-20
	2—HH	6 x 4 u.	04-2341	04-2344	—	—
	3—HHH	9 x 4 u.	04-3341	04-3344	—	—
	4—HHHH	12 x 4 u.	04-4341	04-4344	—	—
	1—H	4 x 3 u.	04-1431	04-1434	04-1431-20	04-1434-20
	2—HH	8 x 3 u.	04-2431	04-2434	—	—
	3—HHH	12 x 3 u.	04-3431	04-3434	—	—
	4—HHHH	16 x 3 u.	04-4431	04-4434	—	—
	1—H	6 x 2 u.	04-1621	04-1624	04-1621-20	04-1624-20
	2—HH	12 x 2 u.	04-2621	04-2624	—	—
	3—HHH	18 x 2 u.	04-3621	04-3624	—	—
	4—HHHH	24 x 2 u.	04-4621	04-4624	—	—
PCB wafer switch	1—H	0 – 9 BCD u.				04P1913

Contact arrangement from the spindle side u. = non-shorting, o.A. = without end stop, can not be adjusted subsequently!

packing unit : 10 pieces

1 mm = 0.04 inch, 1 inch = 25.4 mm

Rotary Switches Type 04

Technical information

Mechanical data

Indexing mechanism

15° = 24 positions
shorting or non-shorting

30° = 12 positions
non-shorting

Switching torque with 1 wafer, 1 pole

Standard:
15 Ncm ± 25%
Special:
8 Ncm ± 25%
20 Ncm ± 25%

Vibration resistance

10–2000 Hz/10 g

Max. admissible tightening torque for nuts

max. 300 Ncm

Mechanical life

> 25000 switching cycles

Temperature range

– 40 °C to + 85 °C

Material data

Housing

pressure cast, zinc plated and passivated

Shaft

stainless steel

Insulation material

Wafers: HF-ceramic
Rotor: polybutylene (PBTB)

Contact material

Rivet (copper)
Segment (brass)
• gold flash
10 µm silver coated, gold flashed
approx. 0.2 µm
• 3µm gold plated
3 µm gold plating on 3 µm nickel layer

Wiper (bronze)

• gold flash
10 µm silver plated, gold flashed
approx. 0.2 µm
• 3 µm gold plated

Soldering data

Handsoldering

Ceramic wafer ≤ 10 s/≤ 350 °C

Machine soldering

Wave ≤ 5 s/≤ 260 °C

Electrical data

Application data

Voltage < 42 V
Current < 2 A

Switching capacity with resistive load:

2 V/<2 A AC/DC
24 V/0,6 A AC/DC
42 V/0,4 A AC/DC

Switching mode

shorting or non-shorting

Contact and lead resistance

< 10 mΩ in new condition

Insulation resistance measured with 500 V DC, for 1 min

> 10¹³ V contact to contact
> 10¹² V contact to earth

Capacitance

1 pF contact to contact

Test voltage at 50 Hz and 60% relative humidity, for 1 min

1000 rms contact to contact
1000 rms contact to earth

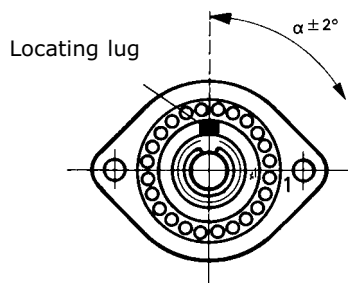
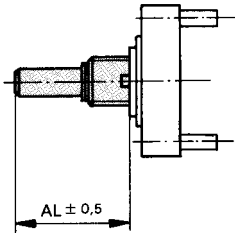
Special Options Type 04

Ordering an option

To order a special option please use the order form on page 106. Please specify your requirements and fax it to your local contact or to Elma.

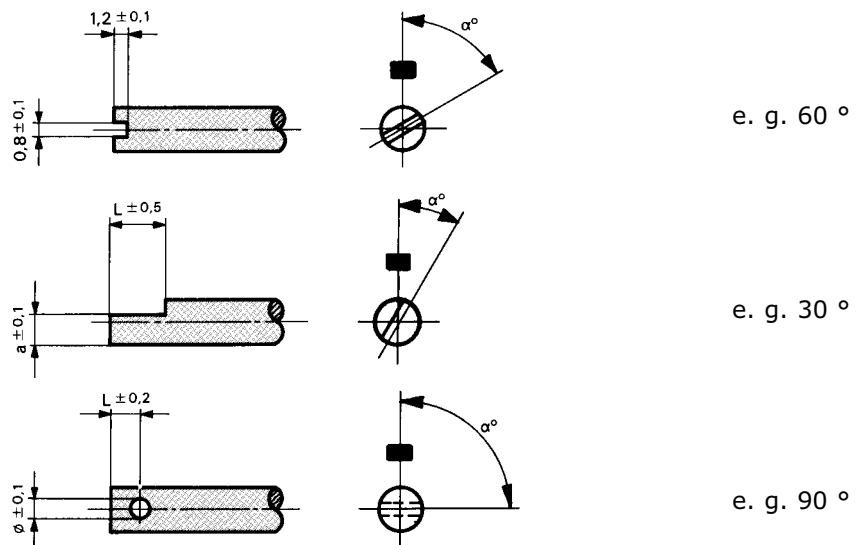
Special shaft length

To order, state the shaft length AL as shown in diagram, measured from mounting face. Specify shaft length on page 106.



Angle in ° from locating lug.
Switch on position 1

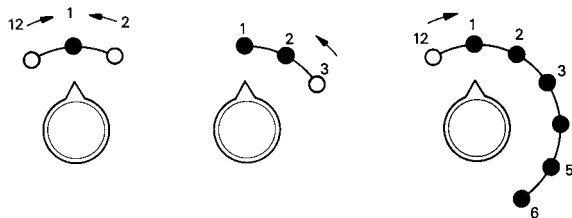
Special types of shaft



Specially machined shafts are available. Specify dimensions on page 106.

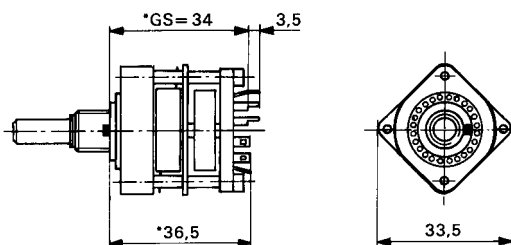
Switch with momentary contact

Examples



- Detent position
- Momentary contact

Dimensions



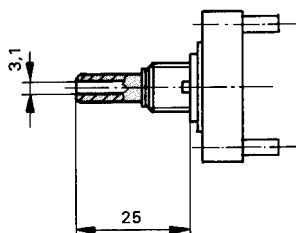
Detent and momentary contact position: 30°

*17,5 mm extra per wafer

Configuration with 1 or 2 momentary positions. Please complete order form on page 106.

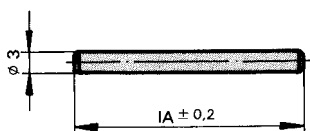
Special Options Type 04

Hollow shaft



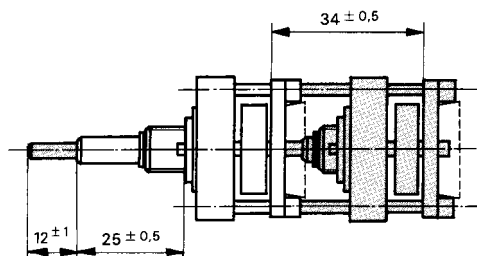
Available for switches up to 5 wafers; inner shaft (\varnothing 3 mm) to be ordered separately.
Please complete order form on page 106.

Inner shaft



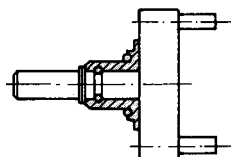
For switches with mounting plate or hollow shaft, inner shafts must be ordered separately. Please state exact length on page 106.

Switches with 2 drive shafts



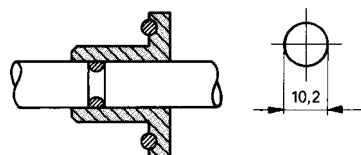
Consisting of a hollow outer plus and inner shaft. The inner shaft driving a maximum of 3 wafers with 6 wipers each. Please give type description of each switch.
Please complete order form on page 106.

Waterproof

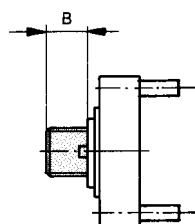


To prevent water penetrating behind the front panel and into the mechanism.
Waterproof up to 1 bar (IP 68).
Please complete order form on page 106.

Front panel cut out

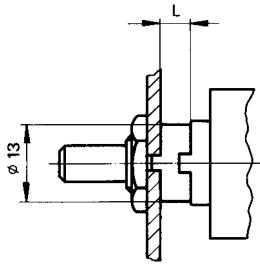


Shortened bushing



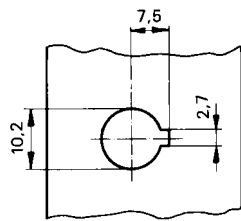
Please state dimension B = min. 3 mm.
Specify dimensions on page 106.

Special Options to Rotary Switches Type 04

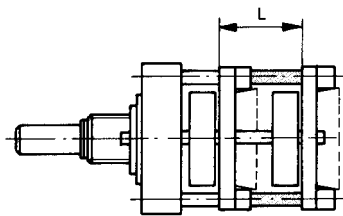


Spacer pieces

Can be used in many cases in place of shortened bushes; made of glass-fibre reinforced plastic to compensate the front panel thickness; available in 2 standard lengths.



Length L	Packet of	Order Numbers
3,5 mm	10 pieces	4124-31
3,5 mm	100 pieces	4124-30
5,5 mm	10 pieces	4124-36
5,5 mm	100 pieces	4124-35



Special wafer spacing

Our spacers allow the following wafer spacing:
L = 21,3 mm or 25,5 mm
Please complete order form on page 106.

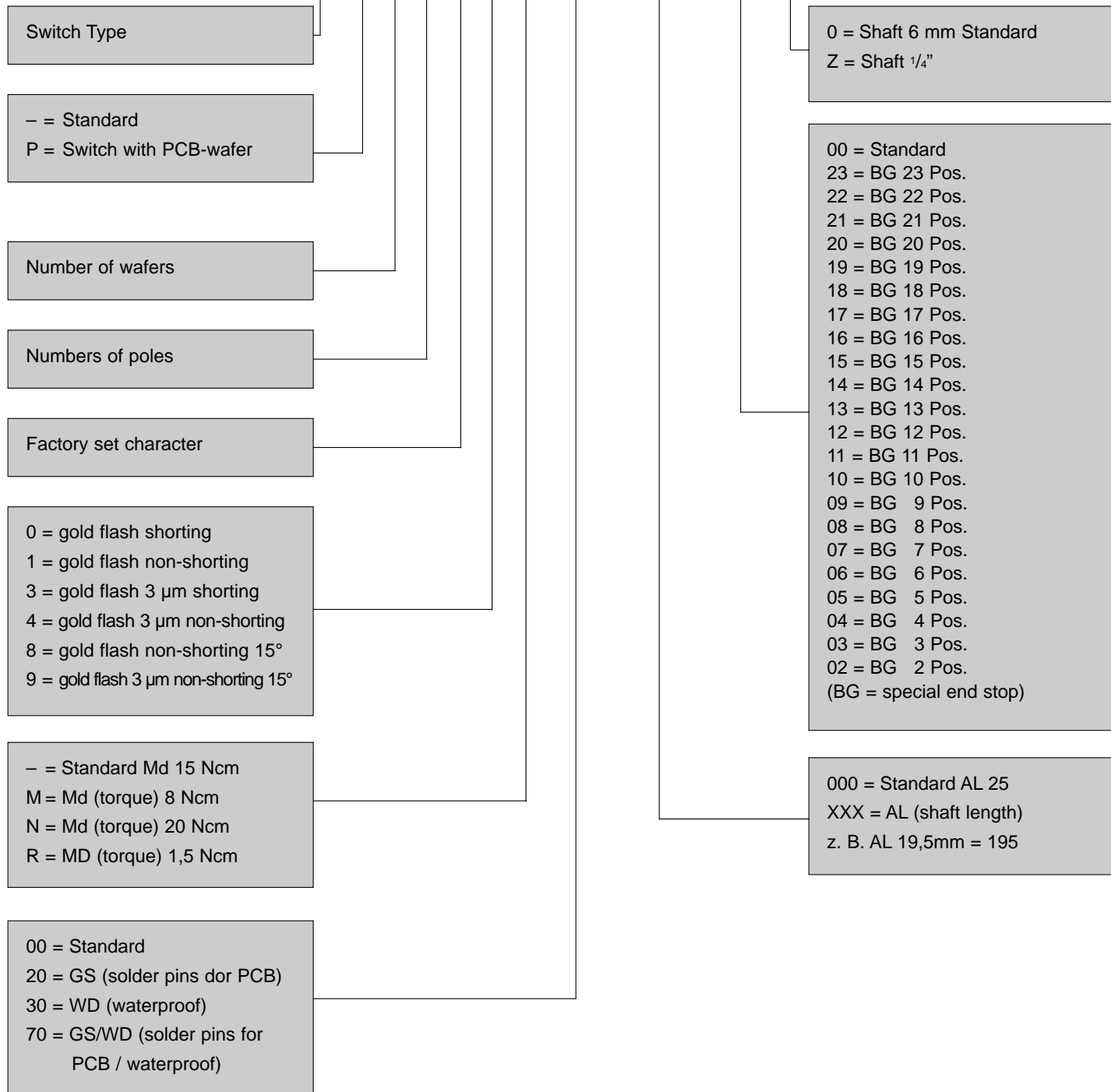
Number of wafers

Special versions with 5 and more wafers. 7 and more wafers fitted with support-bracket.

Ordering Code to Rotary Switches Type 04

This code specifies
the function of the switch

										Options					
0	4	-	X	X	X	X	-	X	X	X	X	X	X	X	X



Md = Switching torque
AL = Shaft length
BG = Special end stop
WD = Waterproof
GS = With solder pins for PCB mounting

Important Facts on Switches

Contact Material

Elma Switches designed for electronic applications are available with gold flash and 3µm gold contacts. 3µm gold contacts display the highest contact corrosion resistance and thus provide the highest switch reliability. They are especially suitable for

- very small currents (dry switch circuits)
- infrequent switching
- high reliability

Gold flash contacts can also be used in applications with regular switching intervals.

If switches are stored for longer periods, we recommend vacuum packing.

Durability

We base the durability (life expectancy) of our switches on the assumption that the specified load values are not exceeded. A higher load triggers a deterioration of the contact surface which reduces life considerably. Also,

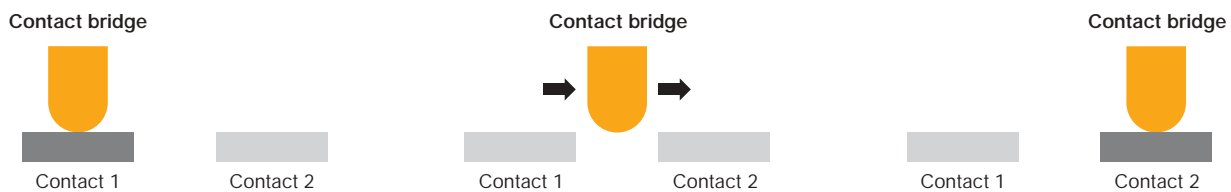
- one full switching cycle consists of a rotation across all positions and back again
- one rotation (switch without end stop) equals 360°
- one detent defines a rotation from one position to the next

Cleaning of soldered printed circuit boards

With the use of modern flow mediums, a cleaning of the PCB after soldering has often become unnecessary. However, if you plan on a cleaning, please see page 58 or contact us for information regarding the recommended approach for that particular product.

Switching modes

Non-shorting (break before make):



Shorting (make before break):

