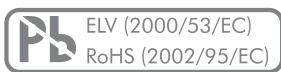


MAIN FEATURES

RUGGED

- Gray, Hex or BCD coding 2 to 16 positions
- Ruggedised stainless steel 6 mm tapped shaft
- Switching torque 4.5 Ncm
- Switching mode: shorting or non-shorting
- Gold plated contacts, nickel silver bushing
- MIL-STD-810F (salt, fog and humidity)
- MIL-STD-202G (shock and vibration)
- Optional IP68 front panel sealing (up to 5 bar)
- Operating temperature range: -40 to +85°C
- Various options and customizations



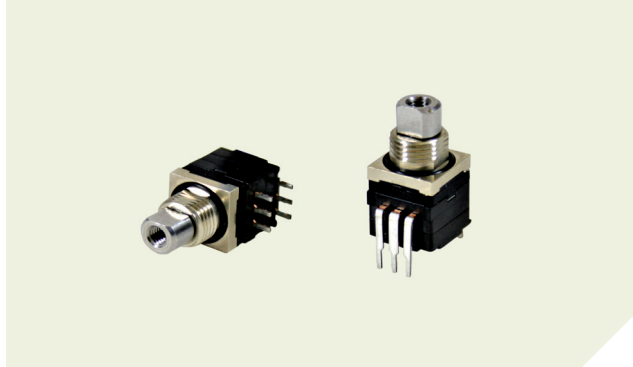
PRODUCT VARIETY

- Vertical or horizontal mounting
- BCD, Hex or Gray coding (shorting or non-shorting)
- Number of positions
- Switching torque BDC: 2.2 or 4.0 Ncm
- Switching torque Hex & Gray: 3.2 or 4.5 Ncm
- With end-stop or endless rotating
- IP60 or IP68 front panel sealing

POSSIBLE CUSTOMIZATIONS

- Shaft dimension and shape
- Bushing, mounting

TYPE M07



TYPICAL APPLICATIONS

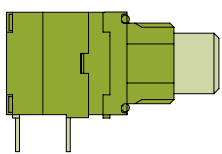
- Frequency and channel selection for two way radios
- Target aiming devices
- Aircraft transponders
- Portable medical equipment
- Industrial automation
- Vision and optical products
- Mobile PCs

POSSIBLE CUSTOMIZATIONS

- Switching torque
- High/low torque function "on/off"
- Others

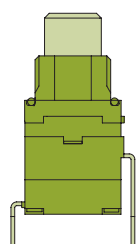
1 PREFERENCE TYPES SELECTION CHART

¹ For other types/options, see type key.



HORIZONTAL

IP SEALING	CODING	SWITCHING MODE	POSITIONS/ INDEXING ANGLE	TORQUE	WITH END-STOP	ENDLESS ROTATING
IP60	Gray	Shorting	16 / 22.5°	3.2 Ncm	M07-1173-200000	M07-1073-200000
				4.5 Ncm	M07-1173H200000	M07-1073H200000
	BCD	Shorting	10 / 36°	2.2 Ncm	M07-1133-200000	M07-1033-200000
				4.0 Ncm	M07-1133H200000	M07-1033H200000
IP68	Gray	Shorting	16 / 22.5°	3.2 Ncm	M07-1173-300000	M07-1073-300000
				4.5 Ncm	M07-1173H300000	M07-1073H300000
	BCD	Shorting	10 / 36°	2.2 Ncm	M07-1133-300000	M07-1033-300000
				4.0 Ncm	M07-1133H300000	M07-1033H300000



VERTICAL

IP SEALING	CODING	SWITCHING MODE	POSITIONS/ INDEXING ANGLE	TORQUE	WITH END-STOP	ENDLESS ROTATING
IP60	Gray	Shorting	16 / 22.5°	3.2 Ncm	M07-3173-200000	M07-3073-200000
				4.5 Ncm	M07-3173H200000	M07-3073H200000
	BCD	Shorting	10 / 36°	2.2 Ncm	M07-3133-200000	M07-3033-200000
				4.0 Ncm	M07-3133H200000	M07-3033H200000
IP68	Gray	Shorting	16 / 22.5°	3.2 Ncm	M07-3173-300000	M07-3073-300000
				4.5 Ncm	M07-3173H300000	M07-3073H300000
	BCD	Shorting	10 / 36°	2.2 Ncm	M07-3133-300000	M07-3033-300000
				4.0 Ncm	M07-3133H300000	M07-3033H300000

SPECIFICATIONS

MECHANICAL DATA

Resolution:	BCD: 10 positions (36° indexing) Other Coding: 16 positions max. (22.5° indexing) End-stops can be set from 2 to 16 (10) positions
Switching mode:	Shorting or non-shorting
Switching torque (new condition):	BCD: 2.2 or 4.0 Ncm (+/- 25%) Hex & Gray: 3.2 or 4.5 Ncm (+/- 25%)
Rotational life:	10'000 cycles min.
End-Stop strength:	60 Ncm
Fastening torque of nut (front panel mounting):	100 Ncm max.

ELECTRICAL DATA

Coding/output:	BCD, BCD complementary, Hex, Hex complementary or Gray
Switching mode:	Shorting or non-shorting
Contact resistance (new condition):	50 mΩ max.
Insulation resistance (new condition):	1 GΩ min. @ 500 VDC
Load current:	10 mA max. (resistive load, 15 VDC max. voltage)
Dielectric withstanding voltage:	500 VDC during 60 seconds (pins to pins, pins to housing)

MATERIAL DATA

Shaft:	Stainless steel (1,4305 grade)
Housing:	Nickel silver, fiber enforced high performance plastic
Nut:	Brass, nickel plated
Contact system:	CuBe alloy, AuCo plated (hard gold)
Soldering leads:	CuBe alloy, tin plated
O-rings:	NBR (nitrile), 70 shore

ENVIRONMENTAL DATA

Operating/storage temperature range:	-40 to +85°C max.
IP sealing:	IP68 (50 meters submersion over 4 h) Washable (sealed contact system)
Vibration:	10 G _{rms} max. @ 10 to 2000 Hz
Flammability:	UL94-HB

PACKAGING QUANTITY

Tray:	50 or 200 pcs.
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¹ The packaging size depends on shipment quantity. If the shipment quantity is
< 200 pcs. then standard tray 50 pcs.
≥ 200 pcs. then standard tray 200 pcs.

SOLDERING CONDITIONS

Hand soldering:	280°C max. during 2 s max.
Wave soldering:	280°C max. peak temperature during 2 s max.

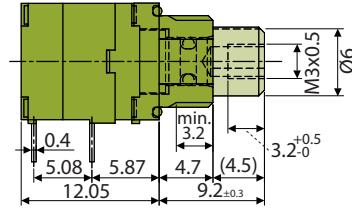
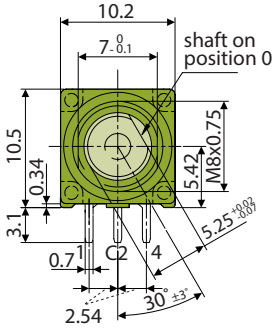
CODING

For all available Coding please see technical explanations at the end of the catalog

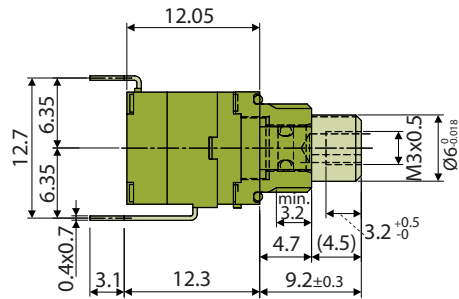
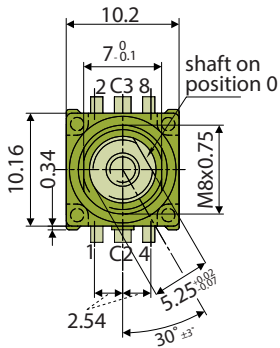
DRAWINGS

Tolerances unless otherwise specified DIN ISO 2768-1 (m)

07 HORIZONTAL



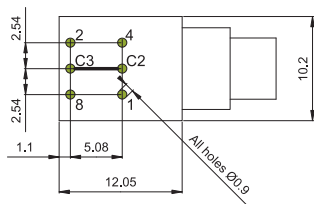
07 VERTICAL



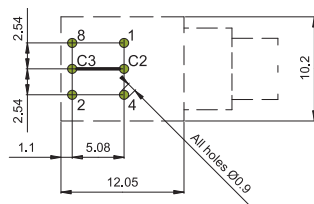
07 DRILLING DIAGRAMS

HORIZONTAL

Commons (C2, C3) must be connected together on the PCB



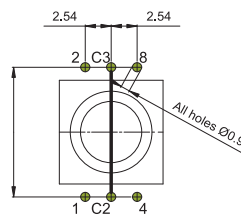
View from switch mounting side of the PCB



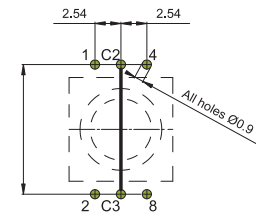
View from soldering side of the switch

VERTICAL

Commons (C2, C3) must be connected together on the PCB

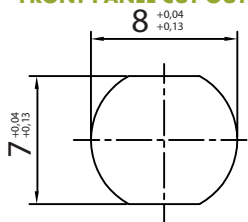


View from switch mounting side of the PCB

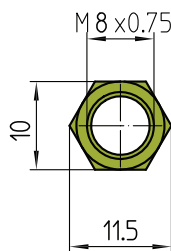


View from soldering side of the switch

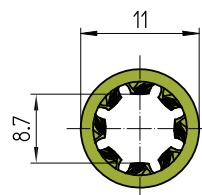
FRONT PANEL CUT OUT



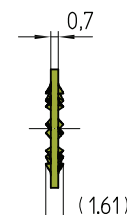
NUT AND WASHER (BOTH SUPPLIED)



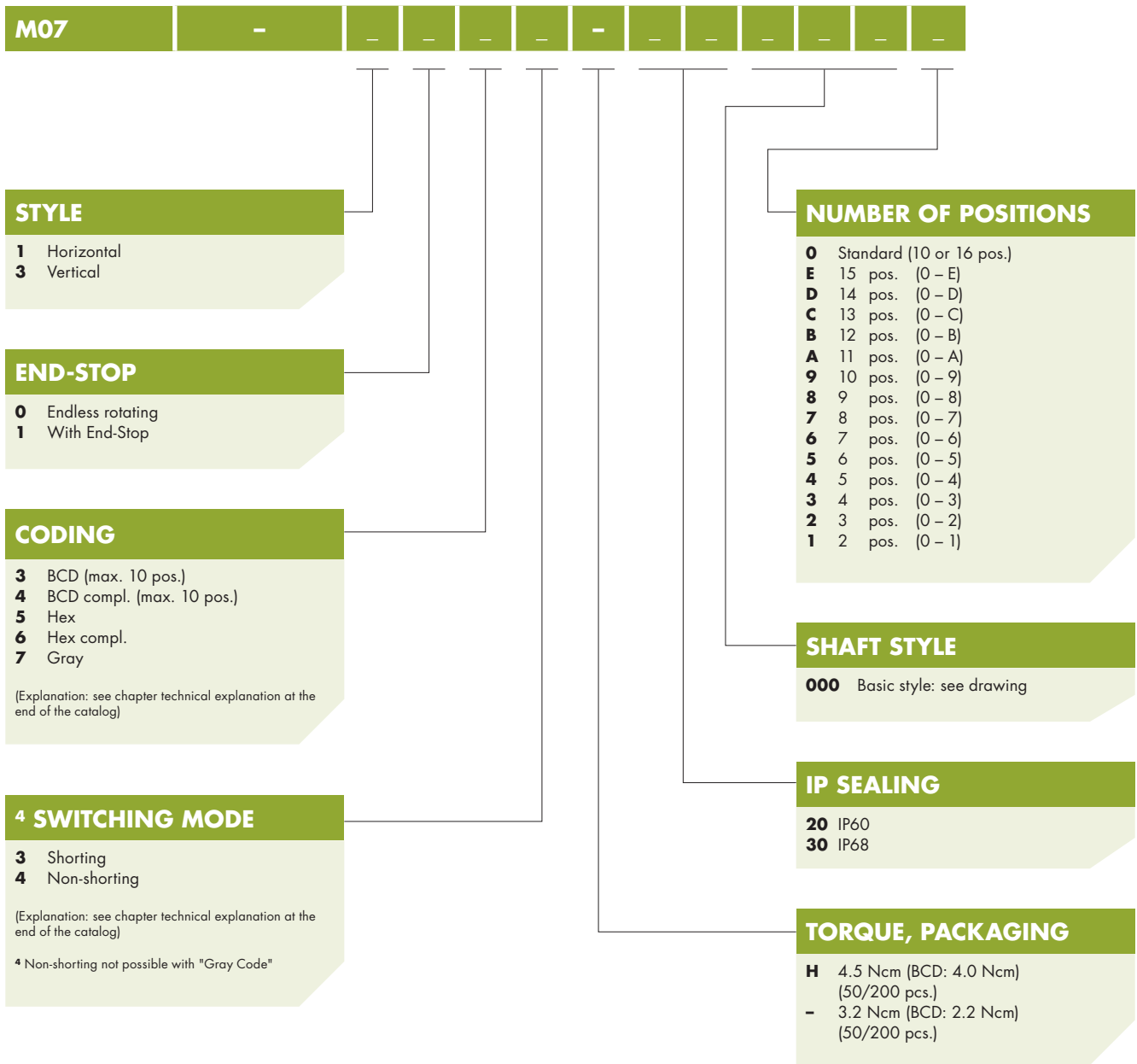
Spare Part
Order number (10 pcs. bag)
- Brass nickel plated: 4024-81



Spare Part
Order number (1 pc. bag, MOQ 10 pcs.)
- 5708-06



TYPE KEY



TECHNICAL EXPLANATIONS

GENERAL SWITCH KNOWLEDGE

POSITION

A position is the mechanical detent of a switch actuator.

DETENT

A detent is a mechanical positioning device for stopping actuator travel at each successive electrical circuit; for example, a spring-operated ball and groove.

POLE

A pole is a single common electrical input having one or more outputs.

WAFER, DECK OR LAYER

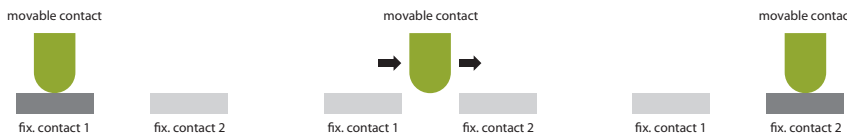
A wafer/deck or layer is a section what the contacts are mounted on.

INDEXING ANGLE

An indexing angle is the number of degrees between each position.
For example: 12 positions for a total of 360 degrees result a 30 degrees indexing angle.

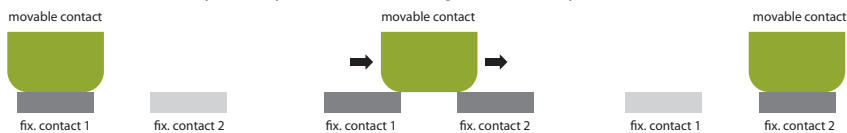
NON-SHORTING CONTACTS "BREAK BEFORE MAKE"

A non-shorting contact is also known as "break before make" and describes the action of one circuit of a pole before interrupting another of the same pole. The switch will be momentarily interrupted before it changes from position 1 to position 2 during actuation (see picture).



SHORTING CONTACTS "MAKE BEFORE BREAK"

A shorting contact is also known as "make before break" and describes the action of one circuit of a pole before interrupting another of the same pole. The switch will momentarily "short" position 1 and 2 during actuation (see picture).



CYCLE

A cycle is the complete sequence of indexing through all successive switch positions and returning to the original position. The rotational life from coded or selector switches are usually specified with cycles.

REVOLUTION

A revolution is the complete sequence of indexing through all successive switch positions in the same direction. The rotational life from encoded switches are usually specified with revolutions.

BENEFITS OF GOLD-PLATED CONTACTS

Gold-plated contacts should be used for longer rotational life, in corrosive environment or in case the switch will not be actuated for a long period of time.

ELMA SPECIFIC SPECIFICATIONS

MECHANICAL CODED SWITCHES (BCD, HEX, GRAY)

A mechanical coded switch usually works with a 4 Bit (4 signals/contacts 1,2,4,8) system. A common contact (C) shortens the circuit. With this contact-system it is possible to achieve 10 to 16 switch positions (depending on which coding is used, see picture below) with only 5 connection-pins. It is a cost effective way to realize a rotary switch.

Disadvantage to use such a system is the need of a microcontroller with a corresponding software and that only low current and voltage can be shorted.

DIFFERENT CODINGS

BCD	BCD Complementary	Hex	Hex Complementary	Gray	
0	0	0	0	0	■ On
1	1	1	1	1	□ Off
2	2	2	2	2	
3	3	3	3	3	
4	4	4	4	4	
5	5	5	5	5	
6	6	6	6	6	
7	7	7	7	7	
8	8	8	8	8	
9	9	9	9	9	
		A	A	A	
		B	B	B	
		C	C	C	
		D	D	D	
		E	E	E	
		F	F	F	

CONCENTRIC FUNCTION

A concentric rotary switch provides two shafts (inner and outer shaft) and analogical to that two switching-functions in one and the same switch.

SWISS CLICK INDEXING SYSTEM™

The "Swiss click indexing system" is an Elma label indicating switches which have a special indexing system to ensure nearly consistent torque over life (see picture below). The appropriate switches are market in our catalogue with that description. The Swiss Click Indexing System™ = ensures consisten torque over life

