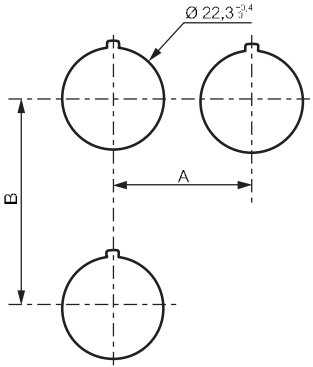


Panel cut-out

DRILLING

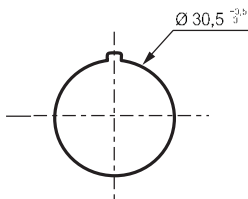


For heads equipped with electrical blocks with screw or plug-in terminals

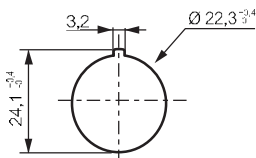
Minimum interval (mm)

	= 30	With or without legend (usual case)
	= 33	IP 67 (silicon shroud)
	= 40	With large legend plate
A	> 40	For mushroom head ϕ 40
	> 45	For selector switch with long handle
	= 38	For super-flush button
	= 50	With 5 position clip
	= 45	With or without legend plate (usual case)
B	= 54	With double touch
	= 77	With double touch + legend plate
	= 50	Joystick

DRILLING FOR SUPER-FLUSH BUTTON

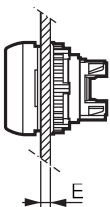


DRILLING WHEN USING THE ANTI-ROTATION RING (OPTIONAL)



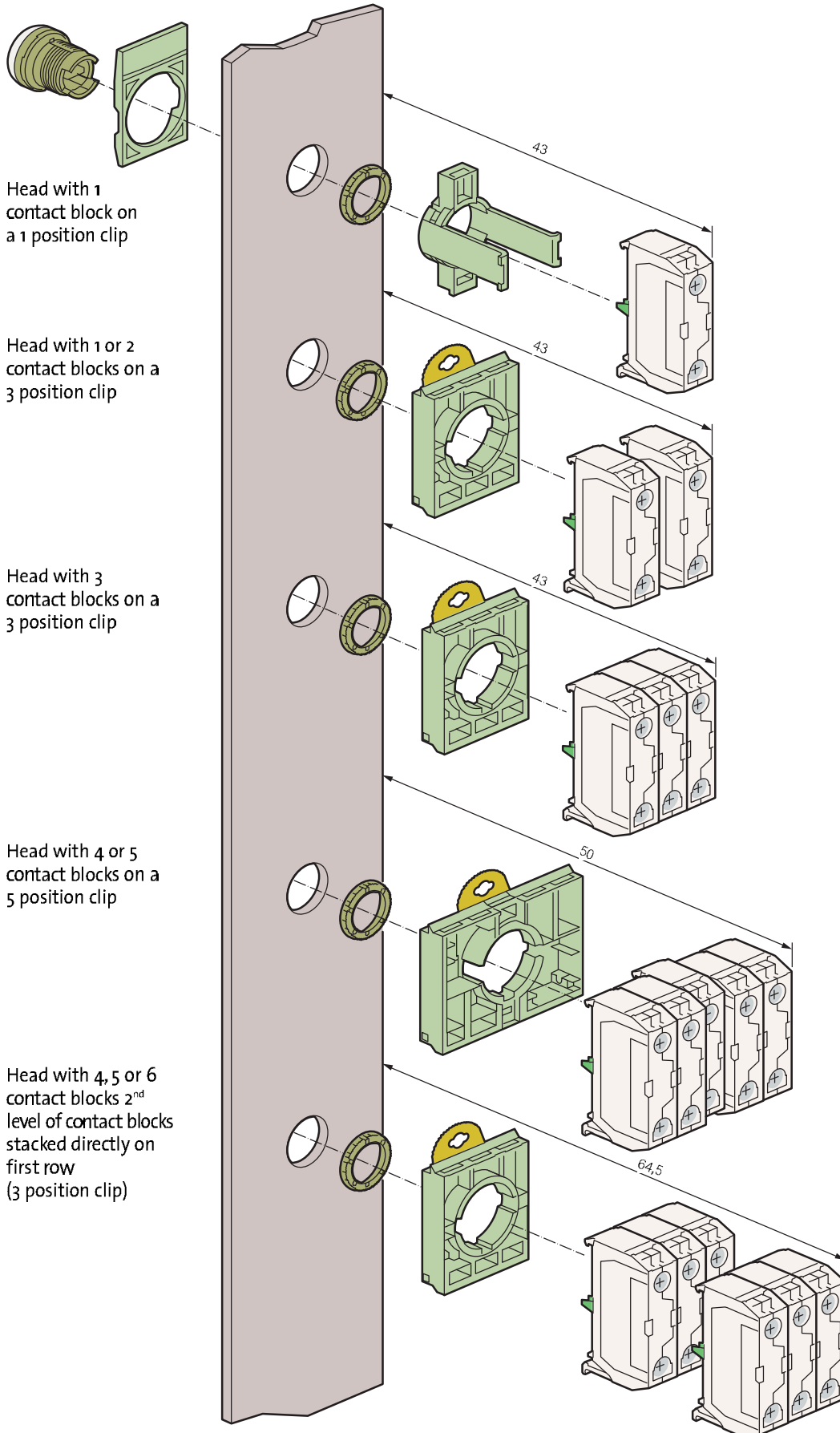
THICKNESS OF PANEL (E)

E = 1 to 6 mm



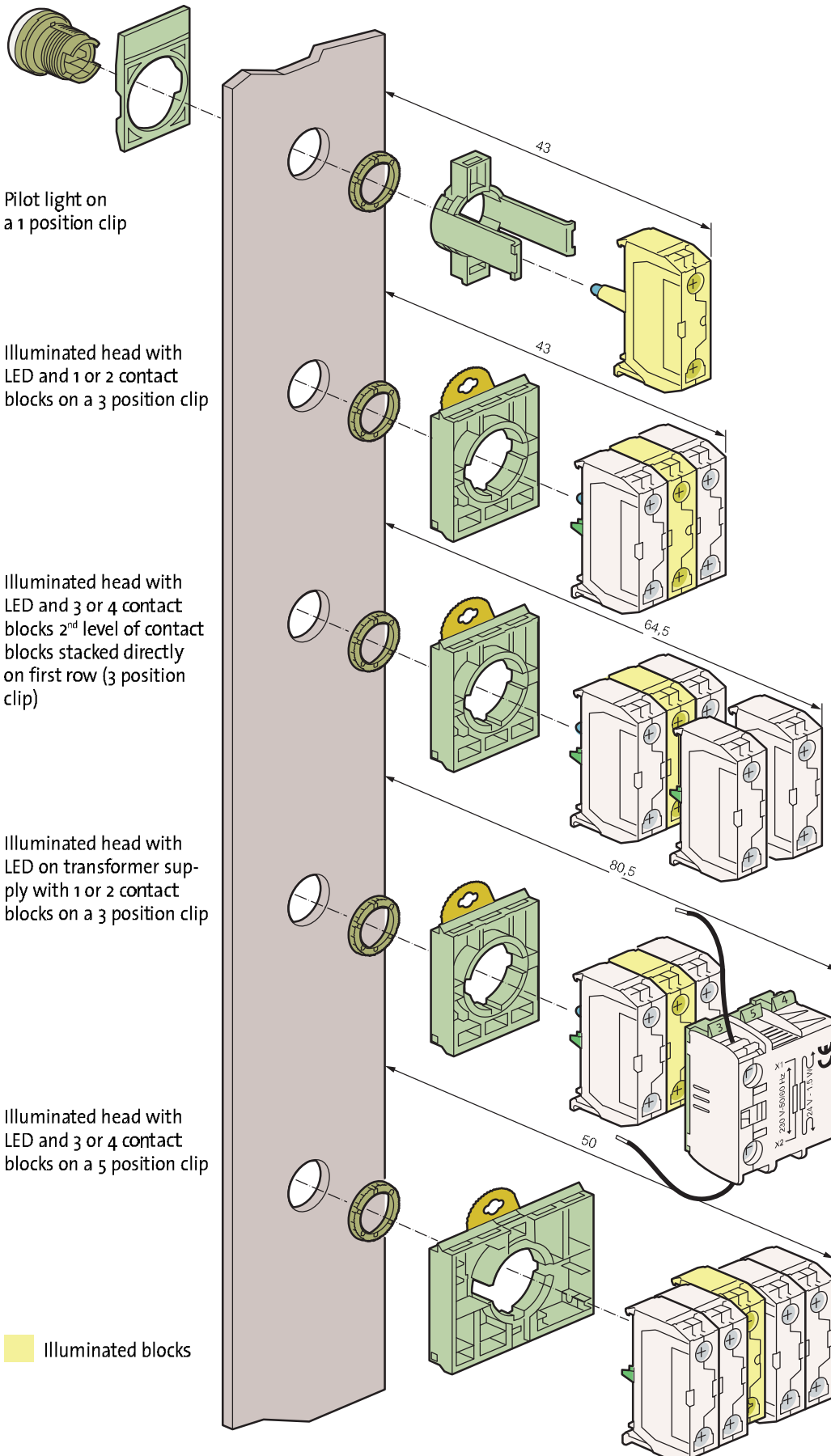
Mounting blocks ϕ 22

NON ILLUMINATED



Mounting blocks ϕ 22

ILLUMINATED



Technical characteristics

► GENERAL

Characteristics	Data	Standards
► Storage temperature	- 40 °C to + 70 °C	
► Operating temperature	- 25 °C to + 70 °C	
► Climatic resistance	Constant humid heat Cyclic damp heat Resistance to sea air	IEC 60068-2-3 IEC 60068-2-30 IEC 60068-2-52
► Degree of protection	IP 66 for standard heads IP 67 for shrouded heads IP 66 for equipped control stations IP 20 at the rear of the panel for contact blocks and one piece pilot lights Type 1, 2, 3, 3R, 3S, 4, 4X, 12, and 13 for heads and control stations	IEC 60529 NEMA standard
► Protection against mechanical impacts	IK 05 illuminated and non illuminated heads IK 07 empty control station	IEC 62262
► Electrical insulation	Class II - heads and control station	IEC 60947-5-1
► Terminal marking		IEC 60947-1
► Tightening torques	Locking ring: recommended 3 N.m terminals: max. 1.2 N.m	
► Approvals	UL United states and Canada BV Bureau Véritas Certification OC/CB	UL 508, CSA 22.2 Marine rules IEC 60947-5-1 IEC 60947-5-5 IEC 60947-5-4
► Vibrations	withstand vibration Fc test: 2 to 25 Hz, 1.6 mm; 25-100 Hz, 4 g	IEC 60068-2-6

Technical characteristics

► CONTACT BLOCKS

Screw and plug-in connection characteristics	Data	Standards	
► Rated insulation voltage	690 V AC 600 V AC	IEC/EN 60947-1 UL 508	
► NC contacts	Positive opening	IEC/EN 60947-5-1	
► Rated impulse voltage U _{imp} Pollution degree	6kV 3		
► Conventional thermal current in free air conditions	AC15: 10 A DC13: 2,5 A	IEC 60947-5-1	
► Electrical ratings	<p>Alternating current AC15 - A 600 U_e = 120 V, I_e = 6 A U_e = 240 V, I_e = 3 A U_e = 380 V, I_e = 1,9 A U_e = 480 V, I_e = 1,5 A U_e = 500 V, I_e = 1,4 A U_e = 600 V, I_e = 1,2 A</p> <p>Minimum operating current - standard blocks U_e = 24 V DC and I_e = 5 mA Failure rate < 10⁻⁸</p>	<p>Direct current DC13 - Q 600 U_e = 125 V, I_e = 0,55 A U_e = 250 V, I_e = 0,27 A U_e = 400 V, I_e = 0,15 A U_e = 500 V, I_e = 0,13 A U_e = 600 V, I_e = 0,1 A</p> <p>- golden contacts U_e = 5 V DC and I_e = 1 mA Failure rate < 10⁻⁸</p>	IEC 60947-5-1
► Electrical operating life	<p>1 million cycles for: - AC15 - B 300 U_e = 120 V, I_e = 3 A U_e = 240 V, I_e = 1,5 A</p> <p>- DC13 - R 300 U_e = 125 V, I_e = 0,22 A U_e = 250 V, I_e = 0,1 A</p>		
► Applicable wire sizes	Rigid or flexible wire without ferrule: 0,5 mm ² to 2 x 2,5 mm ² Rigid or flexible wire with ferrule: 0,5 mm ² to 2 x 1,5 mm ²		
Faston connection	Data	Standards	
► Rated insulation voltage	320 V AC 300 V AC	IEC/EN60947-1 UL 508	
► NC contacts	Positive opening	IEC/EN 60947-5-1	
► Rated impulse withstanding voltage U _{imp} Pollution degree	6 kV 3		
► Conventional thermal current in free air conditions	AC 15: 10 A DC 13: 2,5 A	IEC 60947-5-1	
► Electrical ratings	<p>Alternating current AC15 - A 300 U_e = 120 V, I_e = 6 A U_e = 240 V, I_e = 3 A</p> <p>Minimum current of use U_e = 24 V DC and I_e = 5 mA Failure rate < 10⁻⁸</p>	<p>Direct current DC13 - Q 300 U_e = 125 V, I_e = 0,55 A U_e = 250 V, I_e = 0,27 A</p> <p>- DC13 - R 300 U_e = 125 V, I_e = 0,22 A U_e = 250 V, I_e = 0,1 A</p>	IEC 60947-5-1
► Electrical operating life	<p>1 million cycles for: - AC15 - B 300 U_e = 120 V, I_e = 3 A U_e = 240 V, I_e = 1,5 A</p> <p>- DC13 - R 300 U_e = 125 V, I_e = 0,22 A U_e = 250 V, I_e = 0,1 A</p>		
► Faston size	6,35 mm or 2 x 2,8 mm		

Technical characteristics

► CONTACT BLOCKS

Pin-style connection (for PCB)	Data	Standards	
► Rated insulation voltage	250 V AC 250 V AC	IEC/EN60947-1 UL 508	
► NC contacts	Positive opening	IEC/EN 60947-5-1	
► Rated impulse withstanding voltage Uimp Pollution degree	4 kV 3		
► Conventional thermal current in free air conditions	AC 15: 5 A DC 13: 1 A	IEC 60947-5-1	
► Electrical ratings	Alternating current AC 15 - B 300 Ue = 120 V, Ie = 3 A Ue = 240 V, Ie = 1,5 A	Direct current DC13 - R 300 Ue = 125 V, Ie = 0,22 A Ue = 250 V, Ie = 0,1 A	IEC 60947-5-1 IEC 60947-5-4
	Minimum current of use - standard blocks Ue = 24 V DC and Ie = 5 mA Failure rate < 10 ⁻⁸	- golden contacts Ue = 5 V DC and Ie = 1 mA Failure rate < 10 ⁻⁸	
► Electrical operating life	1 million cycles for: - AC15 - B 300 Ue = 120 V, Ie = 3 A Ue = 240 V, Ie = 1,5 A	- DC13 - R 300 Ue = 125 V, Ie = 0,22 A Ue = 250 V, Ie = 0,1 A	
► Pin diameter	ø 1 mm		

► LED BLOCKS FOR ILLUMINATED HEADS AND ONE PIECE LED PILOT LIGHTS

Characteristics	Data	Standards
► Rated insulation voltage	300 V	IEC/EN 60947-5-1
► Rated impulse voltage Uimp Pollution degree	4 kV (with filter block see p. 64) 3	IEC/EN 60947-1
► Operating voltage	12 to 24 V AC/DC 48 V AC/DC (for LED block) 130 V AC 230 V AC	
► Frequency	50 or 60 Hz	
► Lifetime at rated supply voltage	Red and yellow: 100 000 hours at 25 °C Other colours: 50 000 hours at 25 °C	
► Consumption of LED blocks	Voltage: - 24 V: 25 mA ± 20% - 48 V: 15 mA ± 5% - 130 V: 20 mA ± 10% - 230 V: 16 mA ± 30%	

Technical characteristics

► ONE PIECE PILOT LIGHT BA9S

Characteristics	Data	Standards
► Rated insulation voltage	400 V	IEC 60947-5-1
► Rated impulse withstand voltage Uimp	4 kV	IEC/EN 60947-1
► Bulb rating	400 V max. - 2,6 W max. 240 V max. - 2,6 W max.	IEC 60947-5-1 UL 508

► HEADS

Characteristics	Data	Standards
► Mechanical endurance (in million cycles)	Spring return: 5 Push-push: 0,5 Selector switches: 0,3 Mushroom head maintained function EN 418: 0,10 Mushroom head maintained function: 0,15	
► Activation force in N	Spring return + NO: 6,5 Spring return + NC: 4,5 Additional NO contact: 4,5 Additional NC contact: 3,0 Push-pull mushroom head + NO + NC: 27 Push-turn mushroom head + NO + NC: 22 Push-pull mushroom head EN 418 + NO + NC: 37 Push-turn mushroom head EN 418 + NO + NC: 60	
► Activation force in Nm	Selector switch + NO: 0,04 Additional NO contact: 0,03	

► EMERGENCY STOP ACTUATORS - EN 418/ISO 13850:

According to IEC/EN60947-5-5, the emergency stop function can be provided by an EN418/ISO13850 mushroom head combined with a "positive opening" NC contact block.

The mechanism of our EN418/ISO13850 mushroom heads is so designed that a "push" action of sufficient force to open the contact systematically triggers an irreversible locking of this opening. This generates an "emergency stop" signal which can be cancelled only by deliberate manual resetting of the mushroom head (pull and turn or unlocking by key).

This function allows to generate an "emergency stop" signal for any equipment subject to directive 98/37CE (machinery safety) completed by the IEC 60204-1 standard.

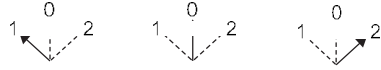
The EN418/ISO13850 mushroom heads also comply with the safety requirements detailed in standards EN418 and ISO13850.

Diagrams

MECHANICAL OPERATION

For 3 position selector switches

Handle position
(front side view)



Contacts block actuation
(back view)



Back side view

Non operated block



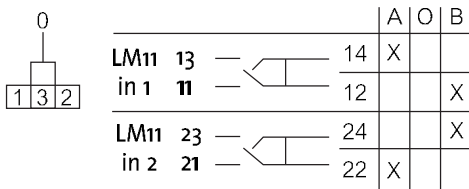
Operated block



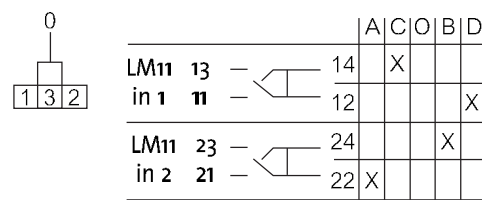
MECHANICAL OPERATION

For Joysticks

2 positions

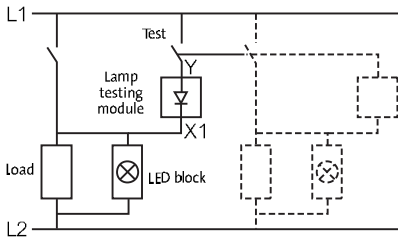


4 positions

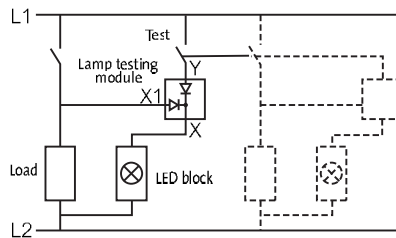


PUSH-TO-TEST LED PILOT LIGHT DIAGRAMS

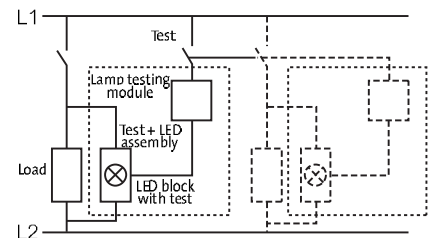
Lamp-testing module with 1 diode (33ET) for direct supply 24 V and 48 V



Lamp-testing module with 2 diodes (33ETT) for direct supply 24 V and 48 V



Lamp-testing assembly for direct supply 130 V and 240 V (Consult us - see page 79)



PRINTED CIRCUIT BOARD MOUNTING

