Separate units ø 22: Heads

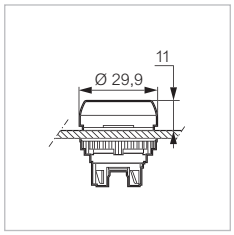
IP 66
To be combined with a clip, LED block and contact blocks (p. 48)
With locking ring
Plastic chrome bezel - Black bezel on request (form p. 79)
Conform to IEC 60947-5-1

Characteristics (p. 94)
Cross reference list (p. 311)

► PUSH-BUTTONS - ILLUMINATED (CONTINUED)

STAY-PUT - FLUSH

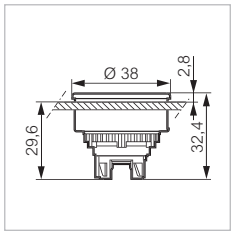
L21CH20



	Réf.
● Red	**L21CH10**
● Green	**L21CH20**
● Yellow	**L21CH40**
○ White	**L21CH50**
● Blue	**L21CH60**

STAY-PUT - SUPER FLUSH

L23CH10

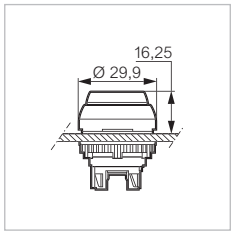


Metallic chrome bezel
Drilling ø 30 mm

● Red	**L23CH10**
● Green	**L23CH20**
● Yellow	L23CH40
○ White	L23CH50
● Blue	L23CH60

STAY-PUT - PROJECTING

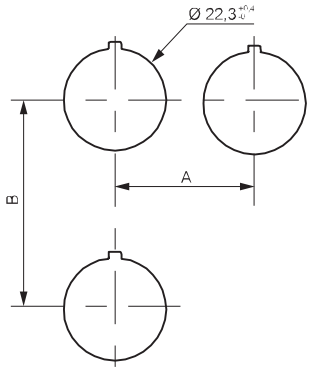
L21CK20



● Red	**L21CK10**
● Green	**L21CK20**
● Yellow	**L21CK40**
○ White	**L21CK50**
● Blue	**L21CK60**

Panel cut-out

DRILLING

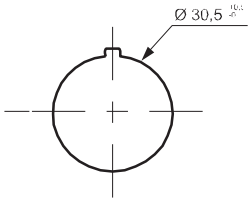


For heads equipped with electrical blocks with screw or plug-in terminals

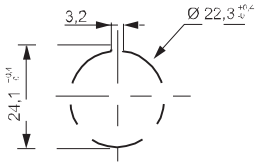
Minimum interval (mm)

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

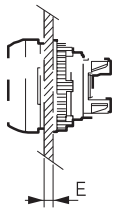
DRILLING FOR SUPER-FLUSH BUTTON



DRILLING WHEN USING THE ANTI-ROTATION RING (OPTIONAL)



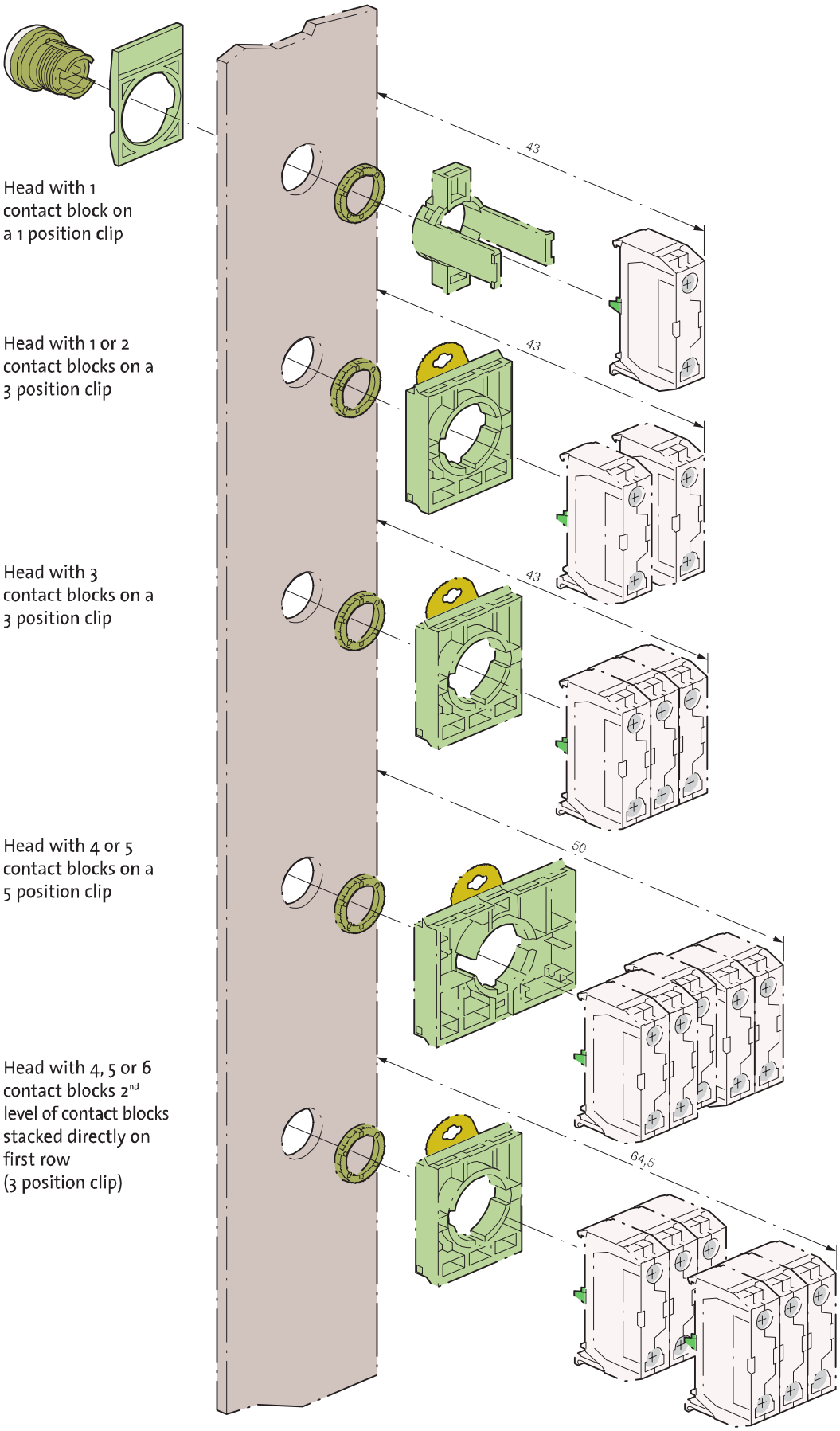
THICKNESS OF PANEL (E)



E = 1 to 6 mm

Mounting blocks ø 22

NON ILLUMINATED



Head with 1 contact block on a 1 position clip

Head with 1 or 2 contact blocks on a 3 position clip

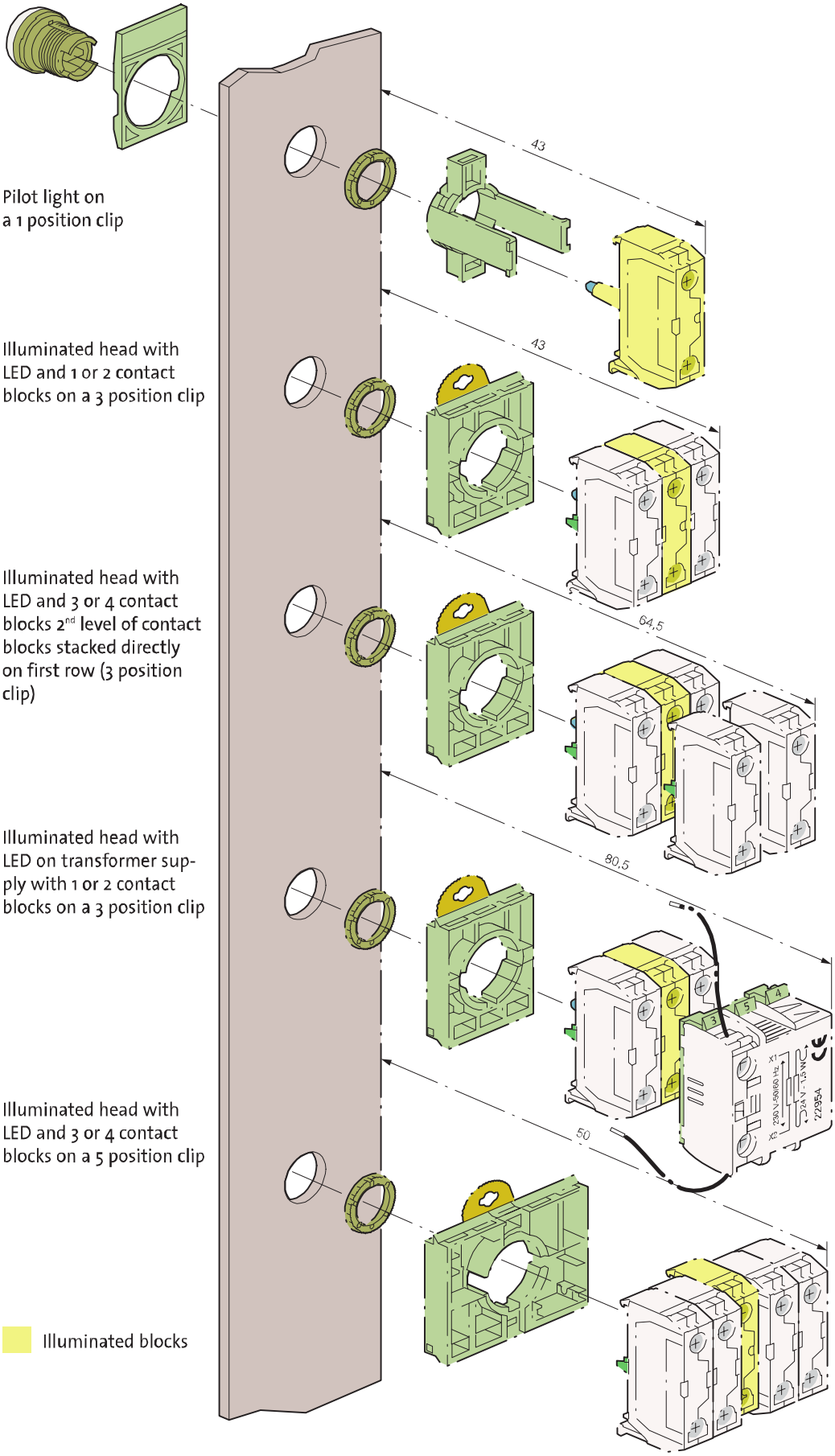
Head with 3 contact blocks on a 3 position clip

Head with 4 or 5 contact blocks on a 5 position clip

Head with 4, 5 or 6 contact blocks 2nd level of contact blocks stacked directly on first row (3 position clip)

Mounting blocks ø 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 Uimp Pollution degree	6kV 3		
► Conventional thermal current in free air conditions	AC15: 10 A DC13: 2,5 A		IEC 60947-5-1
► Electrical ratings	**Alternating current** AC15 - A 600 Ue = 120 V, Ie = 6 A Ue = 240 V, Ie = 3 A Ue = 380 V, Ie = 1,9 A Ue = 480 V, Ie = 1,5 A Ue = 500 V, Ie = 1,4 A Ue = 600 V, Ie = 1,2 A	**Direct current** DC13 - Q 600 Ue = 125 V, Ie = 0,55 A Ue = 250 V, Ie = 0,27 A Ue = 400 V, Ie = 0,15 A Ue = 500 V, Ie = 0,13 A Ue = 600 V, Ie = 0,1 A	IEC 60947-5-1
	Minimum operating current - 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	
► 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 Uimp 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	**Alternating current** AC15 - A 300 Ue = 120 V, Ie = 6 A Ue = 240 V, Ie = 3 A	**Direct current** DC13 - Q 300 Ue = 125 V, Ie = 0,55 A Ue = 250 V, Ie = 0,27 A	IEC 60947-5-1
	Minimum current of use Ue = 24 V DC and Ie = 5 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	
► 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 **Minimum current of use** - standard blocks Ue = 24 V DC and Ie = 5 mA Failure rate < 10^{-8}	**Direct current** DC13 - R 300 Ue = 125 V, Ie = 0,22 A Ue = 250 V, Ie = 0,1 A - golden contacts Ue = 5 V DC and Ie = 1 mA Failure rate < 10^{-8}	IEC 60947-5-1 IEC 60947-5-4
► 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 60947-5-1
► 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:

For equipment subject to Machine Security Directive CE 98/37 and EN60204 standard.

BACO emergency stop switches EN418 and contact blocks meet the requirements of the European Machine Directive EN 418 and EN60947-5-5 specification.

Our E-stops provide the "fool-proof" or "tease-proof" emergency stop switch feature - described below, that latches in the emergency stop command and then switches the contact state to open the circuit and shut down the equipment.

"After the emergency stop command has been generated during actuation of the emergency stop device, the command shall be maintained by engagement (latching-in) of the actuating means. The emergency stop command shall be maintained until the emergency stop device is reset (disengaged). It shall not be possible for the emergency stop device to engage without generating the stop command."

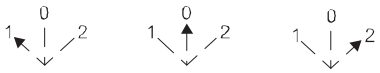
Simply stated, this directive indicates that the latching mechanism of the switch is activated when the actuator is pushed to a certain point. The switch will continue to remain in this latched position until manually reset by twisting to release.

Diagrams

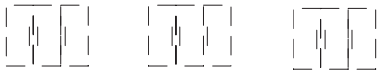
MECHANICAL OPERATION

For 3 position selector switches

Handle position
(front side view)



Contacts block actuation
(back view)



Back side view

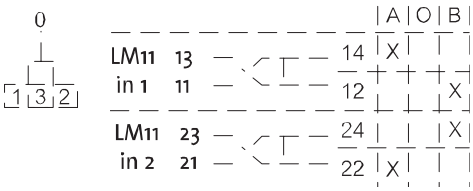
Non operated block

Operated block

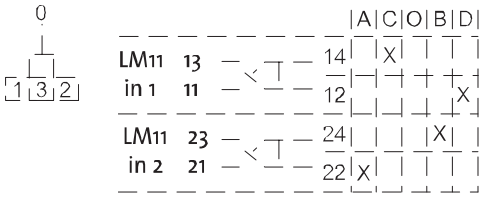
MECHANICAL OPERATION

For Joysticks

2 positions

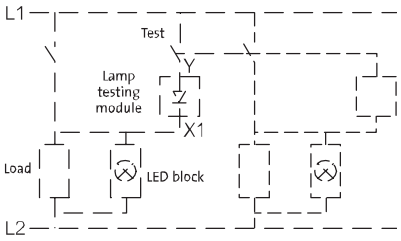


4 positions

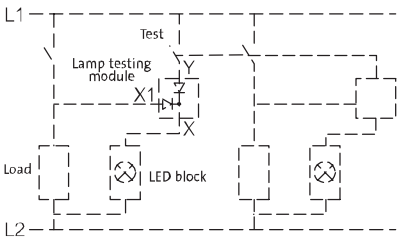


PUSH-TO-TEST LED PILOT LIGHT DIAGRAMS

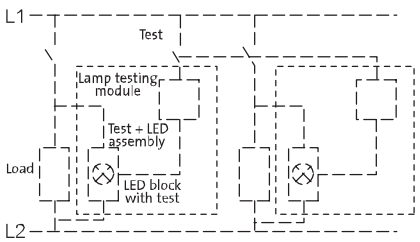
Lamp-testing module with
1 diode (33ET) for direct
supply 24 V and 48V



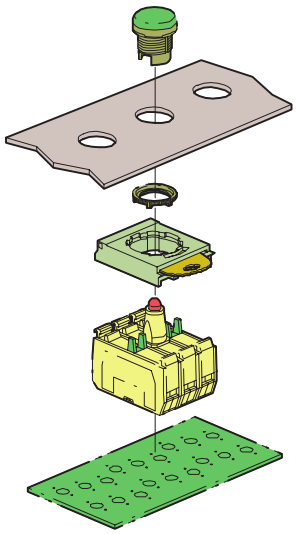
Lamp-testing module with
2 diodes (33ETT) for direct
supply 24 V and 48 V



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



PRINTED CIRCUIT BOARD MOUNTING



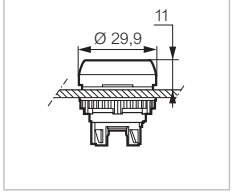
Frontelemente ø 22

IP 66
Mit Befestigungsmutter
Zur Kombination mit einem Adapter und Kontaktelementen (Seite 48)
Frontring Kunststoff verchromt - schwarzer Frontring auf Anfrage (siehe Formular Seite 79)
Nach Norm EN-IEC 60947-5-1

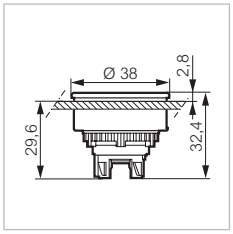
Technische Daten (Seite 94)
Vergleichstabelle (Seite 311)

► RASTEND - BELEUCHTBAR

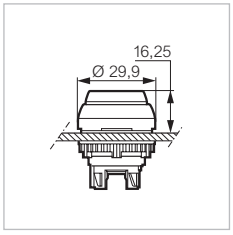
FLACH

	Drücken-Drücken	Bestell-Nr.
L21CH20		● Rot ● Grün ● Gelb ○ Weiß ● Blau	**L21CH10** **L21CH20** **L21CH40** **L21CH50** **L21CH60**

SUPERFLACH

	Drücken-Drücken	Bestell-Nr.
L23CH10		Frontring nur Metall verchromt Bohrung ø 30,5 mm ● Rot ● Grün ● Gelb ○ Weiß ● Blau	 **L23CH10** **L23CH20** L23CH40 L23CH50 L23CH60

HOCH

	Drücken-Drücken	Bestell-Nr.
L21CK50		● Rot ● Grün ● Gelb ○ Weiß ● Blau	**L21CK10** **L21CK20** **L21CK40** **L21CK50** **L21CK60**

Separate units ø 22: Heads

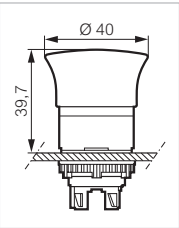
IP 66
To be combined with a clip and electrical blocks (p. 48)
Equipped with a locking ring
Plastic black bezel
Conform to IEC 60947-5-1

Characteristics (p. 94)
Cross reference list (p. 311)

► EN 418/ISO 13850 EMERGENCY STOP - NON ILLUMINATED (CONTINUED)

Ø 40 EN 418/ISO 13850 - STAY-PUT — Push-pull to reset

L22DR01

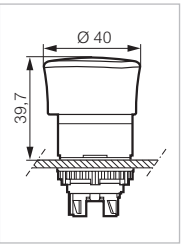


Head position visible from the side with yellow collar
Compliant with the requirements of emergency stop:
IEC 60947-5-5 /EN 418/ISO 13850

● Red — **L22DR01**

Ø 40 EN 418/ISO 13850 - STAY-PUT — Push-turn to reset

L22ER01

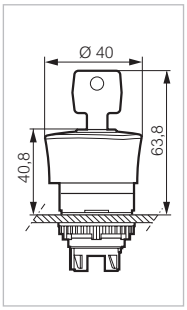


Head position visible from the side with yellow collar
Compliant with the requirements of emergency stop:
IEC 60947-5-5 /EN 418/ISO 13850

● Red — **L22ER01**

Ø 40 EN 418/ISO 13850 - STAY-PUT — Key to reset

L22GR01

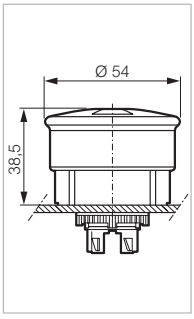


Supplied with 2 keys profile n° 455
Head position visible from the side with yellow collar
Compliant with the requirements of emergency stop:
IEC 60947-5-5 /EN 418/ISO 13850

● Red — **L22GR01**

Ø 54 EN 418/ISO 13850 - STAY-PUT — Push-pull to reset with flag indicator

L22DU01



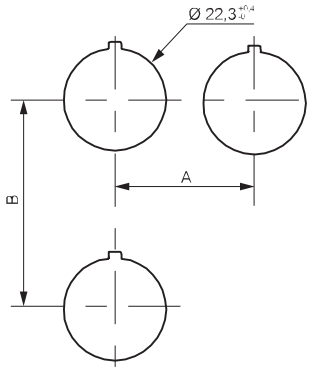
Double position indicator: head and collar
Compliant with the requirements of emergency stop:
IEC 60947-5-5 /EN 418/ISO 13850

● Red - engraving O- I — **L22DU01A**
● Red - engraving STOP - I — **L22DU01**

Catalogue No. in bold: normally in stock at distribution outlets

Panel cut-out

DRILLING

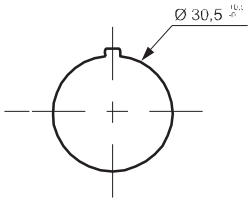


For heads equipped with electrical blocks with screw or plug-in terminals

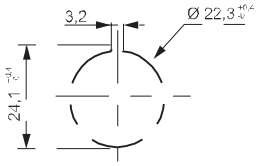
Minimum interval (mm)

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

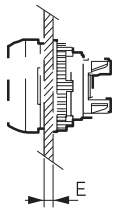
DRILLING FOR SUPER-FLUSH BUTTON



DRILLING WHEN USING THE ANTI-ROTATION RING (OPTIONAL)



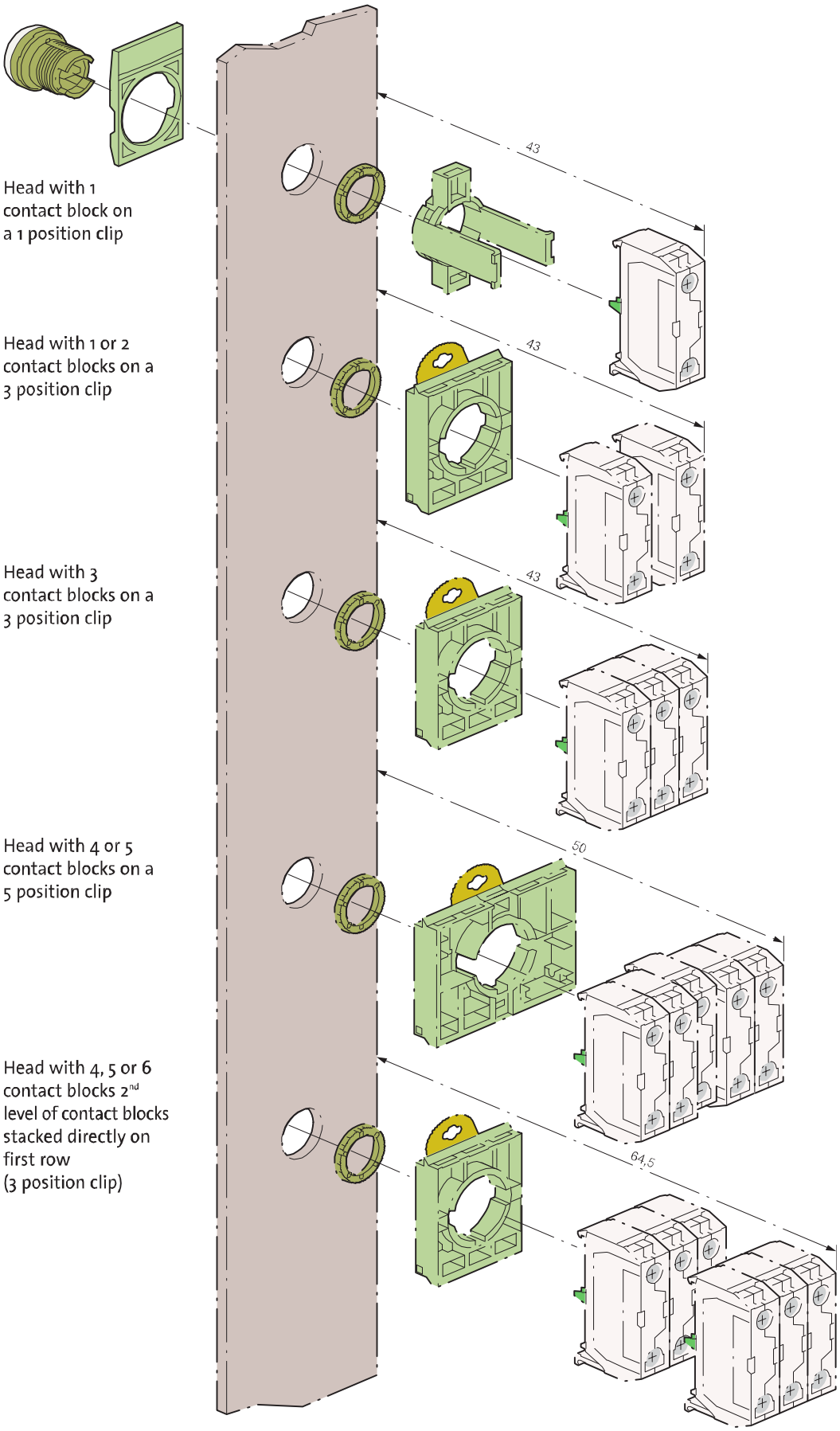
THICKNESS OF PANEL (E)



E = 1 to 6 mm

Mounting blocks ø 22

NON ILLUMINATED



Head with 1 contact block on a 1 position clip

Head with 1 or 2 contact blocks on a 3 position clip

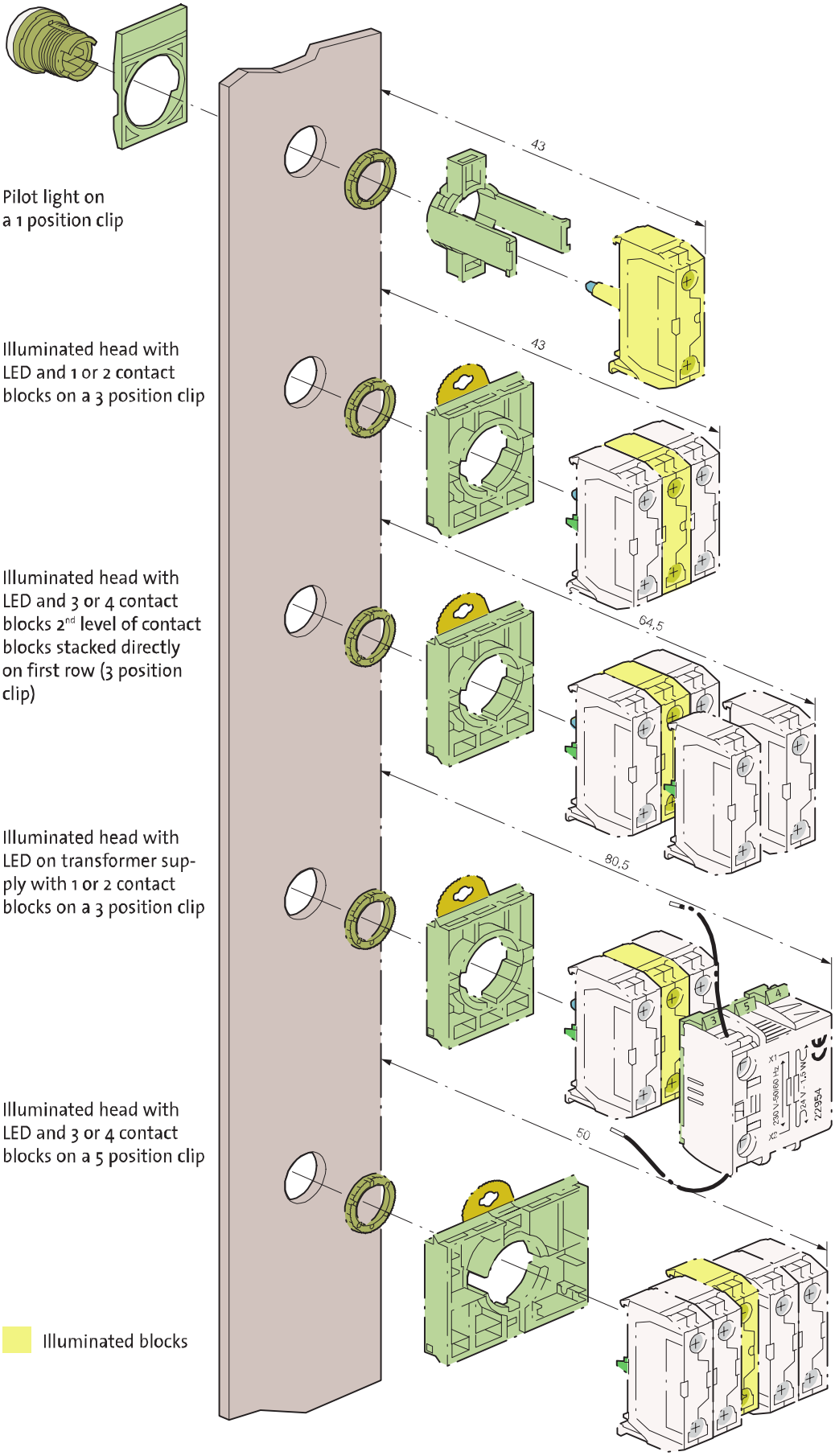
Head with 3 contact blocks on a 3 position clip

Head with 4 or 5 contact blocks on a 5 position clip

Head with 4, 5 or 6 contact blocks 2nd level of contact blocks stacked directly on first row (3 position clip)

Mounting blocks ø 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 Uimp Pollution degree	6kV 3		
► Conventional thermal current in free air conditions	AC15: 10 A DC13: 2,5 A		IEC 60947-5-1
► Electrical ratings	**Alternating current** AC15 - A 600 Ue = 120 V, Ie = 6 A Ue = 240 V, Ie = 3 A Ue = 380 V, Ie = 1,9 A Ue = 480 V, Ie = 1,5 A Ue = 500 V, Ie = 1,4 A Ue = 600 V, Ie = 1,2 A	**Direct current** DC13 - Q 600 Ue = 125 V, Ie = 0,55 A Ue = 250 V, Ie = 0,27 A Ue = 400 V, Ie = 0,15 A Ue = 500 V, Ie = 0,13 A Ue = 600 V, Ie = 0,1 A	IEC 60947-5-1
	Minimum operating current - 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	
► 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 Uimp 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	**Alternating current** AC15 - A 300 Ue = 120 V, Ie = 6 A Ue = 240 V, Ie = 3 A	**Direct current** DC13 - Q 300 Ue = 125 V, Ie = 0,55 A Ue = 250 V, Ie = 0,27 A	IEC 60947-5-1
	Minimum current of use Ue = 24 V DC and Ie = 5 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	
► 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 **Minimum current of use** - standard blocks Ue = 24 V DC and Ie = 5 mA Failure rate < 10^{-8}	**Direct current** DC13 - R 300 Ue = 125 V, Ie = 0,22 A Ue = 250 V, Ie = 0,1 A - golden contacts Ue = 5 V DC and Ie = 1 mA Failure rate < 10^{-8}	IEC 60947-5-1 IEC 60947-5-4
► 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 60947-5-1
► 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:

For equipment subject to Machine Security Directive CE 98/37 and EN60204 standard.

BACO emergency stop switches EN418 and contact blocks meet the requirements of the European Machine Directive EN 418 and EN60947-5-5 specification.

Our E-stops provide the "fool-proof" or "tease-proof" emergency stop switch feature - described below, that latches in the emergency stop command and then switches the contact state to open the circuit and shut down the equipment.

"After the emergency stop command has been generated during actuation of the emergency stop device, the command shall be maintained by engagement (latching-in) of the actuating means. The emergency stop command shall be maintained until the emergency stop device is reset (disengaged). It shall not be possible for the emergency stop device to engage without generating the stop command."

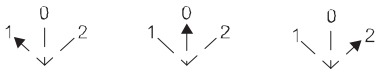
Simply stated, this directive indicates that the latching mechanism of the switch is activated when the actuator is pushed to a certain point. The switch will continue to remain in this latched position until manually reset by twisting to release.

Diagrams

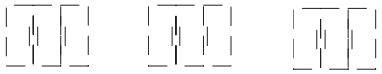
MECHANICAL OPERATION

For 3 position selector switches

Handle position
(front side view)



Contacts block actuation
(back view)



Back side view

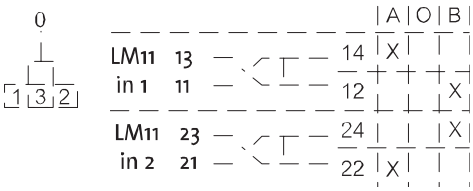
Non operated block

Operated block

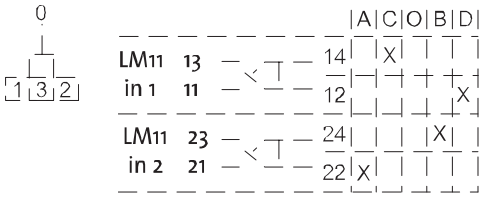
MECHANICAL OPERATION

For Joysticks

2 positions

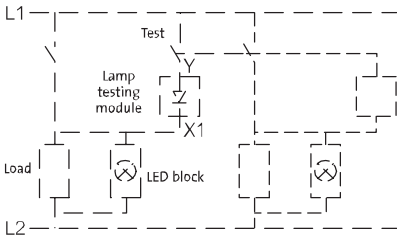


4 positions

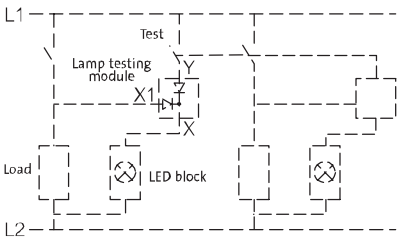


PUSH-TO-TEST LED PILOT LIGHT DIAGRAMS

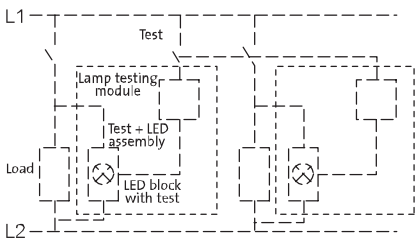
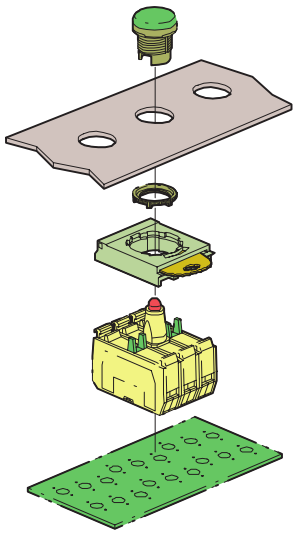
Lamp-testing module with
1 diode (33ET) for direct
supply 24 V and 48V



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