Pushbuttons, Indicating lights, Selector switches and Stacklights

Product Guide

- E22 Series
- 91000T Series
- E26 Series

Innovative Solutions for Control and Indication

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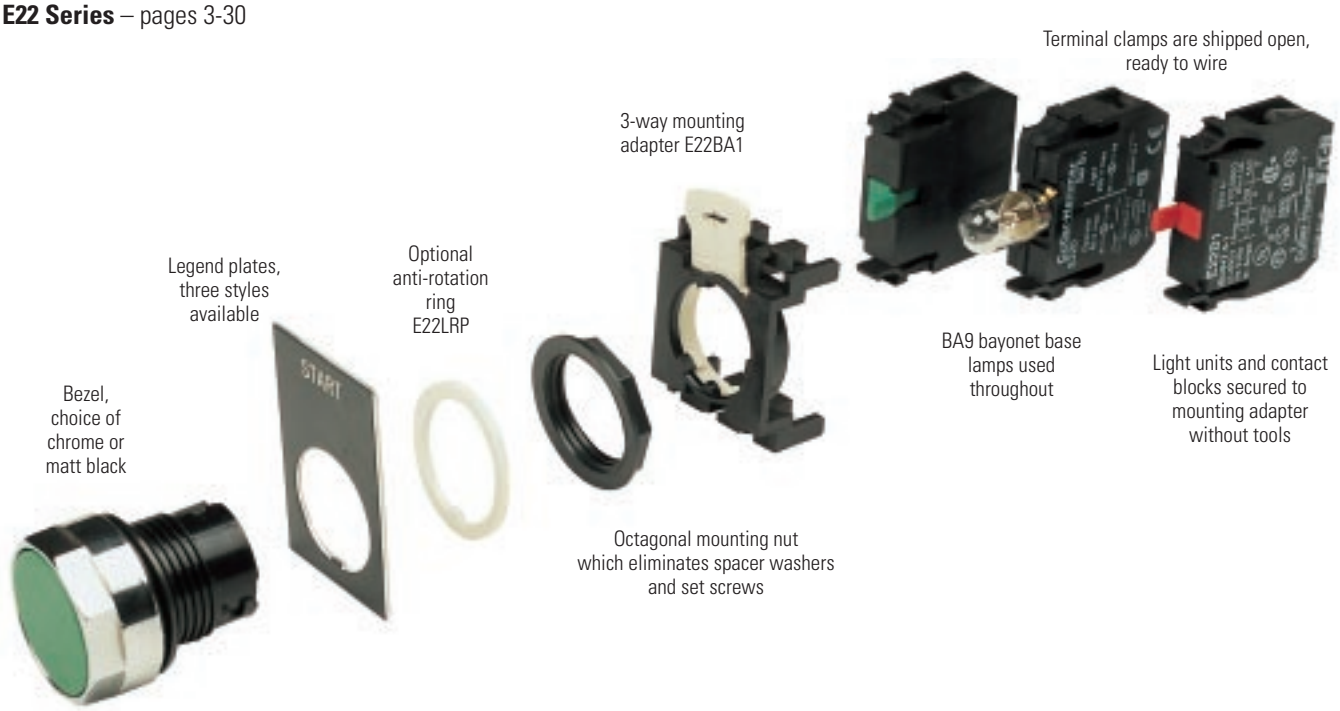

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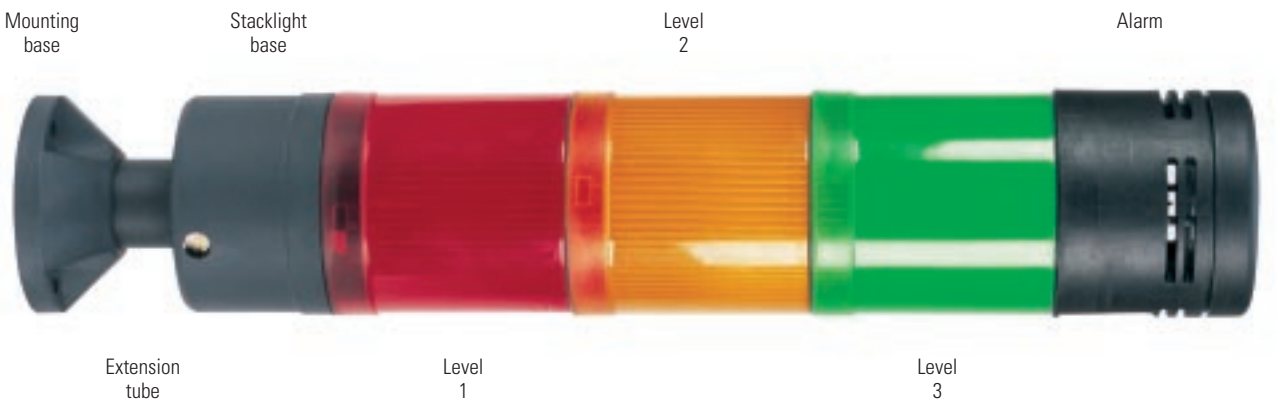

22.5mm operators – E22 Series

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Pushbutton operators non-illuminating *See notes 3,4 & 5*

Chrome bezel	Black bezel	Button colour	Catalogue numbers Chrome bezel	Black bezel	Overall dimensions (mm)
Flush		Black	**E22P1**	**E22PB1**	
		Red	**E22P2**	**E22PB2**	
		Green	**E22P3**	**E22PB3**	
		Yellow	**E22P4**	**E22PB4**	
		White	**E22P5**	**E22PB5**	
		Blue	**E22P6**	**E22PB6**	
25mm diameter push		Grey	**E22P7**	**E22PB7**	Weight 0.043kg
Extended		Black	**E22E1**	**E22EB1**	
		Red	**E22E2**	**E22EB2**	
		Green	**E22E3**	**E22EB3**	
		Yellow	**E22E4**	**E22EB4**	
		White	**E22E5**	**E22EB5**	
		Blue	**E22E6**	**E22EB6**	
25mm diameter push		Grey	**E22E7**	**E22EB7**	Weight 0.043kg

Full shroud bezel operator Add the letter **F** to the flush button catalogue number eg **E22PF1**

Double headed pushbutton operators *See note 6*

Description	Colour of operators	Marking	Ingress protection	Catalogue numbers Black bezel	Overall dimensions (mm)
2 Flush buttons	Green - Red	Unmarked	IP40	**E22DB1A11**	
			IP65	**E22DB1B11**	
	Green - Red	I	IP40	**E22DB1A21**	
		O	IP65	**E22DB1B21**	

Assembled operators

Description	Colour of operators	Marking	Ingress protection	Contact block/ light unit	Operator black bezel	Circuit diagram	Catalogue numbers Black bezel
2 Flush buttons	Green	I	IP40	E22B2	E22DB1A21	13 21	**E22DB1A21C**
	Red	O		E22B1			
			IP65			14 22	**E22DB1B21C**

Contact blocks

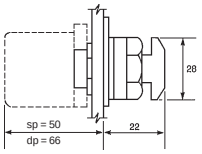
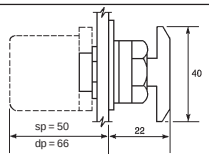
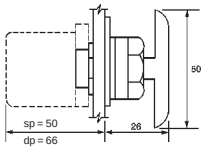
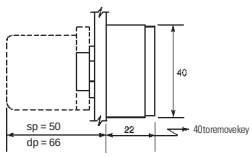
Description	Catalogue numbers Screw terminals	Push-on terminals	Weight (kg)
1N.C.	**E22B1**	**E22BF1**	0.013
1N.O.	**E22B2**	**E22BF2**	0.013
1N.O. - 1N.C.	**E22B11**	**E22BF11**	0.022
2N.O.	**E22B20**	**E22BF20**	0.022
1N.O. early make	**E22B3**	**E22BF3**	0.013
1N.C. late break	**E22B4***	**E22BF4***	0.013
1N.C. low power	**E22B1E**	–	0.013
1N.O. low power	**E22B2E**	–	0.013

Single pole *Double pole*

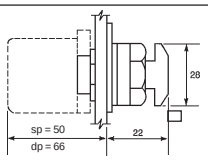
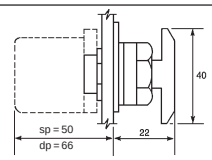
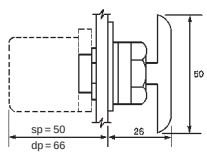
***** Cannot be used with 5 way adaptor

Notes: *3. Mounting adaptor for 3 contact blocks included.*
4. Use operator plug E22BA2 to operate centre contact block.
5. For printed operators see page 9
6. Only 2 contact blocks can be fitted.
7. See page 30 for technical information

Mushroom operators – latched *See notes 5 & 6*

Chrome bezel	Black bezel	Button colour	Catalogue numbers Chrome bezel	Black bezel	Overall dimensions (mm)
Push to latch-twist to release *(6)*		Black	**E22ML1**	**E22MLB1**	
		Red	**E22ML2**	**E22MLB2**	
		Green	**E22ML3**	**E22MLB3**	
		Yellow	**E22ML4**	**E22MLB4**	
28mm diameter head		Blue	**E22ML6**	**E22MLB6**	Weight 0.039kg
		Black	**E22LL1**	**E22LLB1**	
		Red	**E22LL2**	**E22LLB2**	
		Green	**E22LL3**	**E22LLB3**	
		Yellow	**E22LL4**	**E22LLB4**	
40mm diameter head		Blue	**E22LL6**	**E22LLB6**	Weight 0.041kg
Push to latch-pull to release		Red (marked EMERGENCY STOP)			
			E22JPL2N8	**E22JPLB2N8**	
		Black	**E22JPL1**	**E22JPLB1**	
		Red	**E22JPL2**	**E22JPLB2**	
		Green	**E22JPL3**	**E22JPLB3**	
		Aluminium head			
50mm diameter head		Red	**E22JL2**	**E22JLB2**	Weight 0.043kg
Push to latch-key release *(6)*		Black	**E22G1**	**E22GB1**	
		Red	**E22G2**	**E22GB2**	
		Green	**E22G3**	**E22GB3**	

Mushroom operators – spring return *See notes 3, 4 & 5*

		Black	**E22M1**	**E22MB1**	
		Red	**E22M2**	**E22MB2**	
		Green	**E22M3**	**E22MB3**	
		Yellow	**E22M4**	**E22MB4**	
28mm diameter head		Blue	**E22M6**	**E22MB6**	Weight 0.039kg
		Black	**E22L1**	**E22LB1**	
		Red	**E22L2**	**E22LB2**	
		Green	**E22L3**	**E22LB3**	
		Yellow	**E22L4**	**E22LB4**	
40mm diameter head		Blue	**E22L6**	**E22LB6**	Weight 0.041kg
		Black	**E22JP1**	**E22JPB1**	
		Red	**E22JP2**	**E22JPB2**	
		Green	**E22JP3**	**E22JPB3**	
		Aluminium head			
		Red	**E22J2**	**E22JB2**	
		Red (marked EMERGENCY STOP)			
50mm diameter head			**E22J2N8**	**E22JB2N8**	Weight 0.043kg

Trigger action operators – spring return *See note 7*

40mm red twist-to-release with red arrow legend

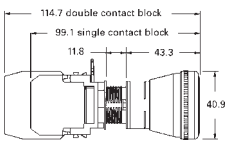
1N.C	**E22LTA2QB**	–
2N.C	**E22LTA2QE**	–

40mm red twist-to-release with white Emergency Machine Off legend

1N.C	**E22LTA2N123QB**	–

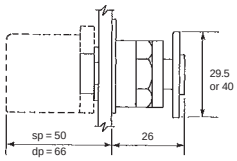
Rectangular safety emergency stop shroud

Yellow	**E22MGTA**	–



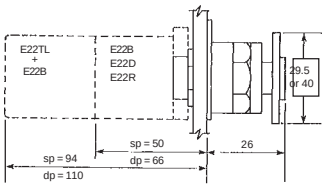
Push-Pull operators non-illuminating *See note 12*

Chrome bezel	Black bezel	Head diameter (mm)	Catalogue numbers Chrome bezel	Black bezel	Overall dimensions (mm)
2 position stayput			Red push (marked EMERGENCY STOP)		
		40	**E22ED2N8**	**E22EDB2N8**	
			Operators without markings		
		40	**E22ED***	**E22EDB***	
		29.5	**E22EH***	**E22EHB***	
3 position spring return to centre *(13)*			Red push (marked EMERGENCY STOP)		
		40	**E22FD2N8**	**E22FDB2N8**	
			Operators without markings		
		40	**E22FD***	**E22FDB***	Weight 0.032kg
		29.5	**E22FH***	**E22FHB***	



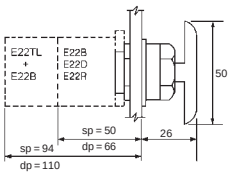
Push-Pull operators suitable for illuminating *See note 12*

2 position stayput			Red push (marked EMERGENCY STOP)		
		40	**E22GD2N8**	**E22GDB2N8**	
			Operators without markings		
		40	**E22GD***	**E22GDB***	
		29.5	**E22GH***	**E22GHB***	
3 position spring return to centre *(13)*			Red push (marked EMERGENCY STOP)		
		40	**E22HD2N8**	**E22HDB2N8**	
			Operators without markings		
		40	**E22HD***	**E22HDB***	
		29.5	**E22HH***	**E22HHB***	Weight 0.032kg



Mushroom operators suitable for illuminating *See note 12*

Push to latch – Pull to release				
		Red	**E22JPT2**	**E22JPTB2**
		Green	**E22JPT3**	**E22JPTB3**
		Yellow	**E22JPT4**	**E22JPTB4**
		White	**E22JPT5**	**E22JPTB5**
		Blue	**E22JPT6**	**E22JPTB6**
		Amber	**E22JPT9**	**E22JPTB9**
		Clear	**E22JPT0**	**E22JPTB0**
50mm diameter head				Weight 0.043kg



Colour code selection for operator pushes 29.5 & 40 mm dia.

Colour	Code	Colour	Code	Colour	Code
Black	**1**	Yellow	**4**	Grey	**7**
Red	**2**	White	**5**	Amber	**9**
Green	**3**	Blue	**6**	Clear	**0**

** Add push colour selection code from table above*

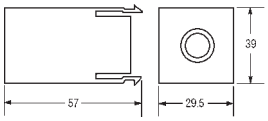
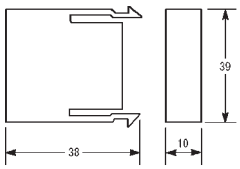
Notes:

10 Transformers E22TL2 to 4 will accommodate 2 contact blocks. Transformer E22TL1 will not accommodate contact blocks.

12 Operators will accommodate 2 contact blocks.

13 Contact block E22B2 can not be used on 3 position Push Pulls.

Light source units – push-pull operators *BA9s bayonet fitting. Bulb supplied with unit*

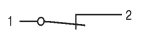
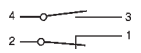
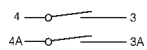
Description	Supply voltage 50Hz	60Hz	Catalogue numbers	Overall dimensions (mm)	Weight (kg)
Transformer *(10)* 6V secondary	110	120	**E22TL1**		0.08
	240	240	**E22TL2**		0.08
	380/415	–	**E22TL3**		0.08
	440	480	**E22TL4**		0.08
Resistor unit	110/120V 60V bulb		**E22R2**		0.018
Direct voltage	6.3V (1W)		**E22D6**		0.018
	12V (1.2W)		**E22D12**		0.018
	24V (1.2W)		**E22D24**		0.018
	50V (1W)		**E22D50**		0.018
	60V (1.2W)		**E22D60**		0.018
	Without bulb		**E22D**		0.018

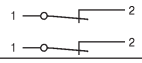
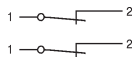
Bulbs For use with E22D above. See page 8 for LED type bulbs.

Description	Operating voltage	Catalogue numbers	Operating voltage	Catalogue numbers
Type BA9s bayonet bulb	6 (1W) flasher	**28-2225-26**	24 (1.2W)	**28-2225-30**
	6.3 (1W)	**28-2225-72**	50 (1W)	**28-2225-31**
	12 (1.2W)	**28-2225-29**	60 (1.2W)	**28-2225-32**

Contact block selection chart *See note 13*

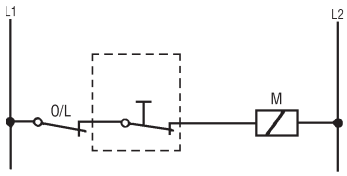
O = circuit open X = circuit closed

2 position push-pull Pulled	Pushed	Circuit	Catalogue numbers
X	O		**E22B1**
O	X		**E22B2**
O	X		**E22B11**
O	X		
O	X		**E22B20**
O	X		

3 position push-pull Pulled	Centre	Pushed	Circuit	Catalogue numbers
X	O	O		**E22B1**
X	X	O		**E22B4**
X	O	O		**E22B1**
O	O	X		**E22B5**

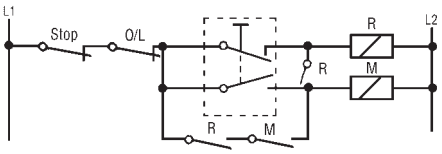
Typical push-pull applications *BA9s bayonet fitting. Bulb supplied with unit*

2 position push-pull with E22B1



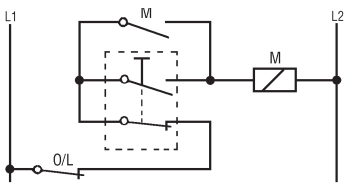
Pull to start
Push to stop

3 position push-pull with E22B1 & E22B5



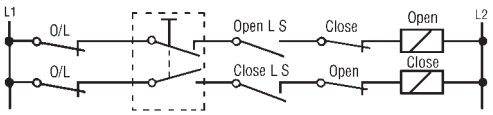
Pull to run
Push to inch

3 position push-pull with E22B1 & E22B4



Pull to run
Push to stop

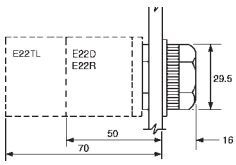
3 position push-pull with E22B1 & E22B5



Pull to open
Push to close

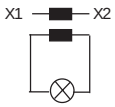
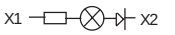
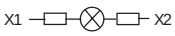
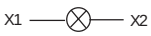
Indicating lights with plastic lens

Description		Lens colour	Catalogue numbers Standard lens	Lens suitable for printing *(7)*	Overall dimensions (mm)
Standard	**Printable**	Red	**E22H2**	**E22A2**	
		Green	**E22H3**	**E22A3**	
		Yellow	**E22H4**	**E22A4**	
		White	**E22H5**	**E22A5**	
		Blue	**E22H6**	**E22A6**	
		Amber	**E22H9**	**E22A9**	
		Clear	**E22H0**	**E22A0**	



Weight 0.023kg

Light source units *BA9s bayonet fitting. Bulb supplied with unit.*

Description Operator unit	Circuit diagram	Supply voltage 50Hz	60Hz	Catalogue numbers	Weight (kg)
Transformer *(10)*		110	120	**E22TL1**	0.08
		240	220	**E22TL2**	0.08
		380/415	–	**E22TL3**	0.08
		440	480	**E22TL4**	0.08
6V secondary					
Resistor/Diode (110V bulb) *(8)*		220/240ac		**E22R1**	0.018
Resistor unit (60V bulb)		110/120ac		**E22R2**	0.018
Single diode unit		6 – 120dc		**E22D1**	0.018
Double diode unit		6 – 120dc		**E22D2**	0.018
Direct voltage		6Vdc (1W)		**E22D6**	0.018
		12Vdc (1.2W)		**E22D12**	0.018
		24Vdc (1.2W)		**E22D24**	0.018
		50Vdc (1W)		**E22D50**	0.018
		110Vdc (2.2W) (8)		**E22D110**	0.018
		Without bulb		**E22D**	0.018

For operator light source units with push-on terminals add the letter **F** to the light source catalogue number eg **E22TLF1**

Bulbs

Filament and Neon type bulbs For use with E22D and E22R above.

Description	Operating voltage	Catalogue numbers
Filament type	6V (1W) flasher	**28-2225-26**
	6.3V (1W)	**28-2225-72**
	12V (1.2W)	**28-2225-29**
	24V (1.2W)	**28-2225-30**
	28V (1.12W)	**28-2225-73**
	50V (1W)	**28-2225-31**
	60V (1.2W)	**28-2225-32**
	110V (2.2W) (8)	**28-2225-24**
Neon type	110V (0.8mA)	**28-2225-48**
	240V (1.5mA)	**28-2225-49**

LED bulbs

Colour	Catalogue numbers Upto 60Vac/dc	120Vac	120Vdc	135Vac/dc
Blue	**E22LED*BN**	**E22LED120BA**	**E22LED120BD**	**E22LED135BD**
Green	**E22LED*GN**	**E22LED120GA**	**E22LED120GD**	**E22LED135GD**
Orange	**E22LED*ON**	**E22LED120OA**	**E22LED120OD**	**E22LED135OD**
Red	**E22LED*RN**	**E22LED120RA**	**E22LED120RD**	**E22LED135RD**
White	**E22LED*WN**	**E22LED120WA**	-	**E22LED135WD**
Yellow	**E22LED*YN**	**E22LED120YA**	**E22LED120YD**	**E22LED135YD**

**Add voltage code alongside to complete catalogue number*

Voltage code

Voltage	Code
10Vac – 6Vdc	**006**
12Vac – 12Vdc	**012**
24Vac – 24Vdc	**024**
35Vac – 35Vdc	**035**
48Vac – 48Vdc	**048**
60Vac – 60Vdc	**060**

Direct voltage type – bulb not included (order bulb separately)

Description	Supply voltage/ wattage	Lens colour	Catalogue numbers Standard lens IP40	Standard lens IP65	Lens with printable insert IP40	Lens with printable insert IP65
Direct voltage without resistor (Excludes bulb) X1 — X2	6 - 130V (2.6W max.) (Not suitable for 240V bulb.)	No lens (2)	**E22HVP**	**E22HV**	**E22HVP**	**E22HV**
		Red	**E22HVP2**	**E22HV2**	**E22HVR2**	**E22HVA2**
		Green	**E22HVP3**	**E22HV3**	**E22HVR3**	**E22HVA3**
		Yellow	**E22HVP4**	**E22HV4**	**E22HVR4**	**E22HVA4**
		White	**E22HVP5**	**E22HV5**	**E22HVR5**	**E22HVA5**
		Blue	**E22HVP6**	**E22HV6**	**E22HVR6**	**E22HVA6**
		Amber	**E22HVP9**	**E22HV9**	**E22HVR9**	**E22HVA9**
		Clear	**E22HVP0**	**E22HV0**	**E22HVR0**	**E22HVA0**
Direct voltage with built-in resistor (Excludes bulb) X1 — X2	220/240V input 110V output (2.6W max.) Use filament bulb only	No lens (2)	**E22HRP**	**E22HR**	**E22HRP**	**E22HR**
		Red	**E22HRP2**	**E22HR2**	**E22HRR2**	**E22HRA2**
		Green	**E22HRP3**	**E22HR3**	**E22HRR3**	**E22HRA3**
		Yellow	**E22HRP4**	**E22HR4**	**E22HRR4**	**E22HRA4**
		White	**E22HRP5**	**E22HR5**	**E22HRR5**	**E22HRA5**
		Blue	**E22HRP6**	**E22HR6**	**E22HRR6**	**E22HRA6**
		Amber	**E22HRP9**	**E22HR9**	**E22HRR9**	**E22HRA9**
		Clear	**E22HRP0**	**E22HR0**	**E22HRR0**	**E22HRA0**

Printed legends for operators and indicating lights

Add the following suffix code to the selected catalogue number. For legends not listed please refer to Eaton.

Legend	Suffix
Close	**N11**
Open	**N26**
Power on	**N80**

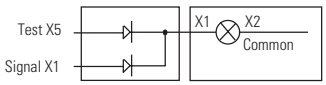
Legend	Suffix
Off	**N24**
On	**N25**
Supply on	**N61**

Legend	Suffix
Motor running	**N56**
Motor stopped	**N57**

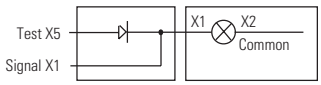
Notes:

2 Order lens and/or insert separately. See page 23
7 For printed inserts see page 23
8 For use with indicating lights only
10 Transformers E22TL2 to 4 will accommodate 2 contact blocks. Transformer E22TL1 does not accomodate contact blocks.

Light source unit master test applications

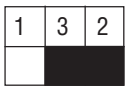


E22D2 **E22D**

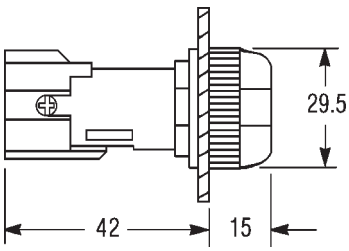


E22D1 **E22D**

Mounting position for light source units



Dimensions (mm)

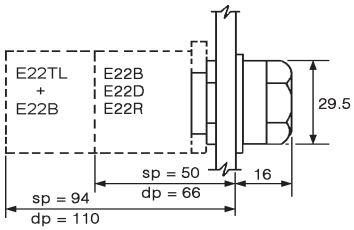


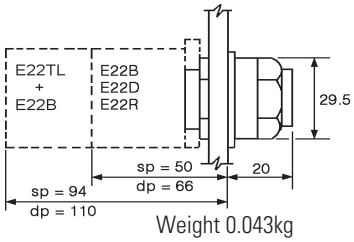
Weight: 0.022kg

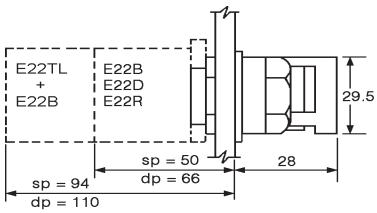
E22 Series - Operators suitable for illuminating and press to test light source units

Pushbutton operators suitable for illuminating *See notes 7, 9 & 11*

Chrome bezel	Black bezel	Lens colour	Catalogue numbers Chrome bezel	Black bezel	Overall dimensions (mm)
Flush button		Red	**E22N2**	**E22NB2**	
		Green	**E22N3**	**E22NB3**	
		Yellow	**E22N4**	**E22NB4**	
		White	**E22N5**	**E22NB5**	
		Blue	**E22N6**	**E22NB6**	
		Amber	**E22N9**	**E22NB9**	
		Clear	**E22N0**	**E22NB0**	
25mm diameter push					Weight 0.043kg
Extended button		Red	**E22T2**	**E22TB2**	
		Green	**E22T3**	**E22TB3**	
		Yellow	**E22T4**	**E22TB4**	
		White	**E22T5**	**E22TB5**	
		Blue	**E22T6**	**E22TB6**	
		Amber	**E22T9**	**E22TB9**	
		Clear	**E22T0**	**E22TB0**	
25mm diameter push					Weight 0.043kg
Full shroud		Red	**E22TX2**	–	
		Green	**E22TX3**	–	
		Yellow	**E22TX4**	–	
		White	**E22TX5**	–	
		Blue	**E22TX6**	–	
		Amber	**E22TX9**	–	
		Clear	**E22TX0**	–	
25mm diameter push					Weight 0.045kg

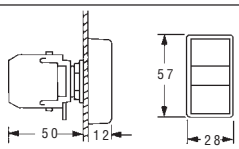






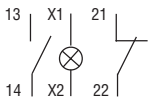
Double headed pushbutton operators *See note 6*

Description	Colour of operators	Marking	Ingress protection	Catalogue numbers Black bezel	Overall dimensions (mm)
2 Flush buttons & 1 pilot light with clear lens	Green - Red	Unmarked	IP40	**E22DB1A10**	
			IP65	**E22DB1B10**	
	Green - Red	I	IP40	**E22DB1A20**	
		O	IP65	**E22DB1B20**	



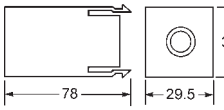
Assembled operators

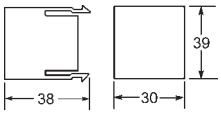
Description	Colour of operators	Marking	Ingress protection	Contact block/ light unit	Operator black bezel	Circuit diagram	Catalogue numbers Black bezel
2 Flush buttons & 1 pilot light with clear lens	Green	I	IP40	E22B2	E22DB1A20		**E22DB1A20X1C**
	Red	O		E22B1			
			IP65	E22D			**E22DB1B20X1C**



Press to test light source units *For use with illuminated operators*

Description	Supply voltage 50Hz	Supply voltage 60HZ	Catalogue numbers	Overall dimensions (mm)
Transformer 6V filament bulb supplied	110	120	**E22TL1C**	
	240	220	**E22TL2C**	
6V secondary				Weight 0.106kg
Resistor unit 60V filament bulb supplied	110/120V		**E22R2C**	
Direct voltage Filament bulb supplied	12V		**E22D12C**	
	24V		**E22D24C**	
	50V		**E22D50C**	Weight 0.044kg

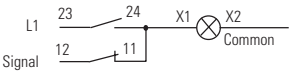




Contact blocks

A light source unit ordered from the table alongside comes complete with 1N.O. & 1N.C. contact blocks.
If the pushbutton is required to be used without a light source unit, select the contact blocks from page 4.

Press to test circuit diagram

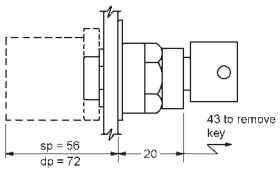


Key selector switches *See note 14*

Chrome bezel

Black bezel

Description	Key removal position	Cam number	Catalogue numbers Chrome bezel	Black bezel	Overall dimensions (mm)
2 Position					
Stayput	Right & left	2	**E22K53**	**E22KB53**	
Spring return from right to left	Left only	2	**E22K62**	**E22KB62**	
2 Position					
Stayput	Centre & right	2	**E22KF5**	**E22KBF5**	
Spring return from right to centre	Centre	2	**E22KE4**	**E22KBE4**	
3 Position					
Stayput & right	Left, centre	1 2	**E22KG7** **E22KH7**	**E22KBG7** **E22KBH7**	
Spring return from left to centre	Centre & right	1 2	**E22KJ5** **E22KK5**	**E22KBJ5** **E22KBK5**	
Spring return from right and left to centre	Centre	1 2	**E22KL4** **E22KM4**	**E22KBL4** **E22KBM4**	
Spring return from right to centre	Left & centre	1 2	**E22KN6** **E22KP6**	**E22KBN6** **E22KBP6**	



Weight 0.055kg

Alternative key removal position selection

To select an alternative key removal position change the last digit of the listed catalogue number with a code from the table below.
e.g. **E22KG6** is a 3 position switch with the key removable from left and centre. Key removal in a spring return position is not available.

Key removal position	Code	Key removal position	Code	Key removal position	Code	Key removal position	Code
Right only	**1**	Right & left	**3**	Right & centre	**5**	Right, left & centre	**7**
Left only	**2**	Centre only	**4**	Left & centre	**6**		

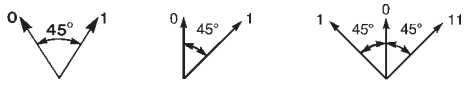
Special lock selection

Key operated devices listed above are supplied with a standard lock and key, ref. no. 92239.
Different locks and keys are available on request.

Notes:

6 Only 2 contact blocks can be fitted.
7 For printed inserts see page 23
9 Operators will accommodate 2 contact blocks and 1 direct unit or 1 transformer
11 For printed operators see page 23
14 For contact block sequences see pages 14 & 15

Selector switch switching angles



Selector switches non-illuminating *See note 14*

Chrome bezel

Black bezel

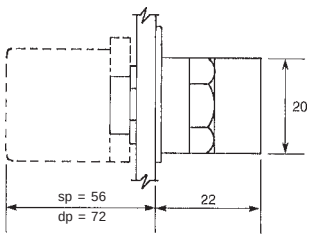
Knob operator

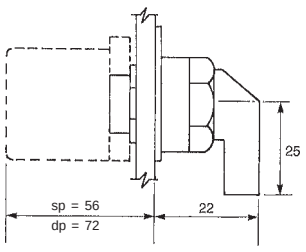
Chrome bezel

Black bezel

Lever operator

Description	Cam number	Catalogue numbers Chrome bezel	Black bezel	Overall dimensions (mm)
Knob selector switch (black)				
2 Position				
Stayput	2	**E22X51**	**E22XB51**	
Spring return from right to left	2	**E22X61**	**E22XB61**	
2 Position				
Stayput	2	**E22XF1**	**E22XBF1**	
Spring return from right to centre	2	**E22XE1**	**E22XBE1**	
3 Position				
Stayput	1	**E22XG1**	**E22XBG1**	
	2	**E22XH1**	**E22XBH1**	
Spring return from left to centre	1	**E22XJ1**	**E22XBJ1**	
	2	**E22XK1**	**E22XBK1**	
Spring return from right and left to centre	1	**E22XL1**	**E22XBL1**	
	2	**E22XM1**	**E22XBM1**	
Spring return from right to centre	1	**E22XN1**	**E22XBN1**	
	2	**E22XP1**	**E22XBP1**	Weight 0.043kg
Lever selector switch (black)				
2 Position				
Stayput	2	**E22V51**	**E22VB51**	
Spring return from right to left	2	**E22V61**	**E22VB61**	
2 Position				
Stayput	2	**E22VF1**	**E22VBF1**	
Spring return from right to centre	2	**E22VE1**	**E22VBE1**	
3 Position				
Stayput	1	**E22VG1**	**E22VBG1**	
	2	**E22VH1**	**E22VBH1**	
Spring return from left to centre	1	**E22VJ1**	**E22VBJ1**	
	2	**E22VK1**	**E22VBK1**	
Spring return from right and left to centre	1	**E22VL1**	**E22VBL1**	
	2	**E22VM1**	**E22VBM1**	
Spring return from right to centre	1	**E22VN1**	**E22VBN1**	
	2	**E22VP1**	**E22VBP1**	Weight 0.043kg





Note:

Different colour knobs and levers are available. Please contact Eaton.

Selector switches suitable for illuminating *See note 14*

Chrome bezel

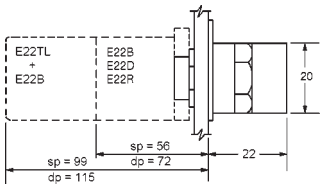
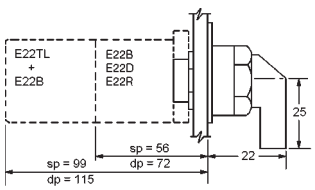
Black bezel

Knob operator

Chrome bezel

Black bezel

Lever operator

Description	Cam number	Catalogue numbers Chrome bezel	Black bezel	Overall dimensions (mm)
Knob selector switch (red) *(15)*				
2 Position				
Stayput	2	**E22S52**	**E22SB52**	
Spring return from right to left	2	**E22S62**	**E22SB62**	
2 Position				
Stayput	2	**E22SF2**	**E22SBF2**	
Spring return from right to centre	2	**E22SE2**	**E22SBE2**	
3 Position				
Stayput	1	**E22SG2**	**E22SBG2**	
	2	**E22SH2**	**E22SBH2**	
Spring return from left to centre	1	**E22SJ2**	**E22SBJ2**	
	2	**E22SK2**	**E22SBK2**	
Spring return from right and left to centre	1	**E22SL2**	**E22SBL2**	
	2	**E22SM2**	**E22SBM2**	
Spring return from right to centre	1	**E22SN2**	**E22SBN2**	
	2	**E22SP2**	**E22SBP2**	Weight 0.043kg
Lever selector switch (red) *(15)*				
2 Position				
Stayput	2	**E22W52**	**E22WB52**	
Spring return from right to left	2	**E22W62**	**E22WB62**	
2 Position				
Stayput	2	**E22WF2**	**E22WBF2**	
Spring return from right to centre	2	**E22WE2**	**E22WBE2**	
3 Position				
Stayput	1	**E22WG2**	**E22WBG2**	
	2	**E22WH2**	**E22WBH2**	
Spring return from left to centre	1	**E22WJ2**	**E22WBJ2**	
	2	**E22WK2**	**E22WBK2**	
Spring return from right and left to centre	1	**E22WL2**	**E22WBL2**	
	2	**E22WM2**	**E22WBM2**	
Spring return from right to centre	1	**E22WN2**	**E22WBN2**	
	2	**E22WP2**	**E22WBP2**	Weight 0.043kg

Notes:

14 For contact block sequences see pages 14 & 15

15 For light source units see page 8

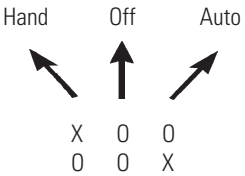
Cam and contact block selection chart – 3 way adaptor *See note 16*

Circuit configurations. Viewed from front of panel

2 position Cam II	3 position Cam I	Cam II	Contact block mounting position. Viewed from rear of panel Left 1	Central 3	Right 2	Contact arrangement	Catalogue number
0 X	X 0 0	X 0 X	■	□	□	14 — 13	**E22B2**
X 0	0 X X	0 X 0	■	□	□	12 — 11	**E22B1**
0 X X 0	X 0 0 0 X X	X 0 X 0 X 0	■	□	□	14 — 13 12 — 11	**E22B11**
0 X 0 X	X 0 0 X 0 0	X 0 X X 0 X	■	□	□	14 — 13 14A — 13A	**E22B20**
0 X	0 0 X	0 0 X	□	□	■	24 — 23	**E22B2**
X 0	X X 0	X X 0	□	□	■	22 — 21	**E22B1**
0 X X 0	0 0 X X X 0	0 0 X X X 0	□	□	■	24 — 23 22 — 21	**E22B11**
0 X 0 X	0 0 X 0 0 X	0 0 X 0 0 X	□	□	■	24 — 23 24A — 23A	**E22B20**
0 X X 0	X 0 0 0 X 0	X 0 X 0 X 0	■ B11	□	■ B1	14 — 13 12 — 11 22 — 21 (External link)	**E22B11+B1**
0 X X 0 0 X	X 0 0 0 X 0 0 0 X	X 0 X 0 X 0 0 0 X	■ B11	□	■ B11	14 — 13 12 — 11 (External link) 22 — 21 24 — 23	**E22B11+B11**

Explanation of how to use selector switch contact block selection chart

1. Determine the "X O" sequence you require for your application.
Example:



X = Cicuit closed
O = Circuit open

2. Locate the first sequence "X O O" under column marked Cam I or Cam II, then identify which Cam and contact is used and in what position it is assembled.
Example: "X O O" uses Cam I, E22B2, mounting position 1 (left)

3. Repeat for second sequence "O O X". Do not mix sequences from Cam I and Cam II.
Example: "O O X" uses Cam I, E22B2, mounting position 2 (right)

4. Assemble contact block(s) to adaptor in the mounting position selected (two contact blocks per switch), using the selector switch with the appropriate cam and switch positions. Cam I has 1 peak, Cam II has 2 peaks, viewed from the rear.

Terminal numbers
These identify the contact block position and contact function.

Example: 14 — 13.
The "1" indicates mounting position number 1 (left), "3 & 4" indicates the circuit is N.O.

Note: *16 Illuminated selector switches will accommodate 1 direct voltage or 1 transformer unit with 2 contact blocks.*

5 Way adaptor mounting example

Requirement

Hand	Off	Auto
X	0	0
0	0	X
X	0	0
X	0	0
0	X	X

Contact status	Mounting position 5–	1–	3–	2–	4–	Contact arrangement	Contact block catalogue number
X O O	□	■	□	□	□	14 — 13	E22B2
O O X	□	□	□	■	□	24 — 23	E22B2
X O O	■	□	□	□	□	34 — 33	E22B2
X O O O X X	□	□	■ 〃	□	□	54 — 53 52 — 51	E22B11

With contact block printing facing position 2

The above example uses a 3 position selector switch cam 1 plus mounting adaptor E22BA12

Cam and contact block selection charts – 5 way adaptor

2 position selector switch operators and pushbuttons

Circuit configurations viewed from front of panel

2 postion cam 2	Pushbutton	Contact block mounting position 5– 1– 3– 2– 4–	Contact arrangement	Contact block catalogue number
0 X		■ ■ ■ ■ ■	–4 –3	E22B2
X 0		■ ■ ■ ■ ■	–2 –1	E22B1
0 X X 0		■ ■ ■ ■ ■	–4 –3 –2 –1	E22B11
0 X 0 X		■ ■ ■ ■ ■	–4 –3 –4A –3A	E22B20

3 position selector switch operators

Circuit configurations viewed from front of panel

3 position cam I	3 position cam 2	Contact block mounting position 5– 1– 3– 2– 4–	Contact arrangement	Contact block catalogue number
X 0 0	Not suitable	■ ■ ▭ A □ □	–4 –3	E22B2
0 X X	"	■ ■ ▭ A □ □	–2 –1	E22B1
X 0 0 0 X X	" "	■ ■ ▭ A □ □	–4 –3 –2 –1	E22B11
X 0 0 X 0 0	" "	■ ■ ▭ A □ □	–4 –3 –4A –3A	E22B20
0 0 X	"	□ □ ▭ B ■ ■	–4 –3	E22B2
X X 0	"	□ □ ▭ B ■ ■	–2 –1	E22B1
0 0 X X X 0	" "	□ □ ▭ B ■ ■	–4 –3 –2 –1	E22B11
0 0 X 0 0 X	" "	□ □ ▭ B ■ ■	–4 –3 –4A –3A	E22B20

▭ **A**. Operated as positions 1 & 5 with contact block printing facing position 2. **B**. Operated as positions 2 & 4 with contact block printing facing position 1.

Applications

Use any combination of contact blocks/light source except where noted

Front of panel device	5 way adaptor/back of panel options			
	Non ill operators		Ill operators	
	E22BA11	BA12	E22BA11L	BA12L
Flush & extended pushbuttons	Yes	No	Yes	No
28, 40, 50mm mushroom (momentary)	Yes	No	No	No
50mm mushroom latch (pull to release)	Yes	No	Yes	No
40mm mushroom latch (key release)	Yes †	No	No	No
28 & 40mm mushroom latch (twist to release)	Yes †	No	No	No
29.5 and 40mm 2 position push pull	Yes	No	Yes	No

Front of panel device	5 way adaptor/back of panel options			
	Non ill operators		Ill operators	
	E22BA11	BA12	E22BA11L	BA12L
29.5 and 40mm 3 position push pull	No	No	No	No
Double headed pushbutton	No	No	No	No
2 position selector switch cam 2	Yes	No	Yes	No
3 position selector switch cam 1	No	Yes	No	Yes
3 position selector switch cam 2	No	No	No	No

† 4 single circuit contact blocks maximum

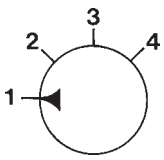
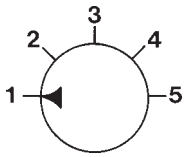
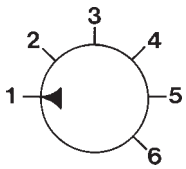
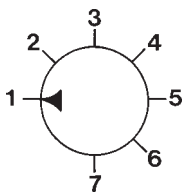
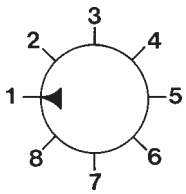
Notes:
E22B4 & E22BF4 can not be used with 5 way adaptors.
5 way adaptors can only be used in single way double contact block depth enclosures.

Complete rotary cam selector switches *See notes 17 & 18*

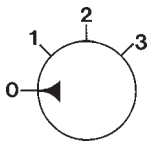
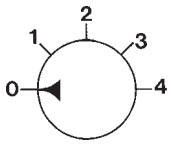
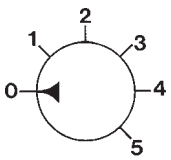
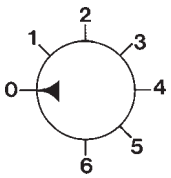
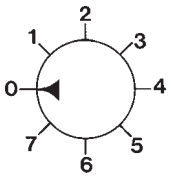
Lever operator

Knob operator

Key operator

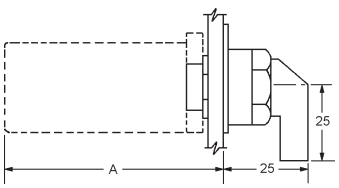
Description, circuit and terminal numbers	Contact sequence	Switch position	Operator type	Catalogue numbers Chrome bezel	Black bezel
4 Position 2—1 6—5 4—3 8—7	1 2 3 4 X 0 0 0 0 X 0 0 0 0 X 0 0 0 0 X		Lever Knob Key	**E22JD4W1** **E22LD4W1** **E22KD4W8**	**E22JDB4W1** **E22LDB4W1** **E22KDB4W8**
5 Position 2—1 8—7 10—9 6—5 4—3	1 2 3 4 5 X 0 0 0 0 0 X 0 0 0 0 0 X 0 0 0 0 0 X 0 0 0 0 0 X		Lever Knob Key	**E22JD5W1** **E22LD5W1** **E22KD5W8**	**E22JDB5W1** **E22LDB5W1** **E22KDB5W8**
6 Position 2—1 6—5 10—9 12—11 4—3 8—7	1 2 3 4 5 6 X 0 0 0 0 0 0 X 0 0 0 0 0 0 X 0 0 0 0 0 0 X 0 0 0 0 0 0 X 0 0 0 0 0 0 X		Lever Knob Key	**E22JD6W1** **E22LD6W1** **E22KD6W8**	**E22JDB6W1** **E22LDB6W1** **E22KDB6W8**
7 Position 2—1 6—5 10—9 14—13 4—3 8—7 12—11	1 2 3 4 5 6 7 X 0 0 0 0 0 0 0 X 0 0 0 0 0 0 0 X 0 0 0 0 0 0 0 X 0 0 0 0 0 0 0 X 0 0 0 0 0 0 0 X 0 0 0 0 0 0 0 X		Lever Knob Key	**E22JD7W** **E22LD7W1** **E22KD7W8**	**E22JDB7W1** **E22LDB7W1** **E22KDB7W8**
8 Position 2—1 6—5 10—9 14—13 4—3 8—7 12—11 16—15	1 2 3 4 5 6 7 8 X 0 0 0 0 0 0 0 0 X 0 0 0 0 0 0 0 0 X 0 0 0 0 0 0 0 0 X 0 0 0 0 0 0 0 0 X 0 0 0 0 0 0 0 0 X 0 0 0 0 0 0 0 0 X 0 0 0 0 0 0 0 0 X		Lever Knob Key	**E22JD8W1** **E22LD8W1** **E22KD8W8**	**E22JDB8W1** **E22LDB8W1** **E22KDB8W8**

Complete rotary cam selector switches *See notes 17 & 18*

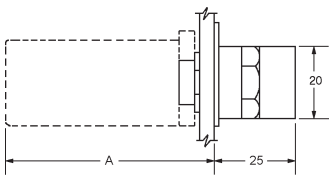
Description, circuit and terminal numbers	Contact sequence	Switch position	Operator type	Catalogue numbers Chrome bezel	Black bezel
4 Position 2 — 1 6 — 5 4 — 3	0 1 2 3 0 X 0 0 0 0 X 0 0 0 0 X		Lever Knob Key	**E22JD4Y1** **E22LD4Y1** **E22KD4Y8**	**E22JDB4Y1** **E22LDB4Y1** **E22KDB4Y8**
5 Position 2 — 1 6 — 5 4 — 3 8 — 7	0 1 2 3 4 0 X 0 0 0 0 0 X 0 0 0 0 0 X 0 0 0 0 0 X		Lever Knob Key	**E22JD5Y1** **E22LD5Y1** **E22KD5Y8**	**E22JDB5Y1** **E22LDB5Y1** **E22KDB5Y8**
6 Position 2 — 1 6 — 5 8 — 7 10 — 9 4 — 3	0 1 2 3 4 5 0 X 0 0 0 0 0 0 X 0 0 0 0 0 0 X 0 0 0 0 0 0 X 0 0 0 0 0 0 X		Lever Knob Key	**E22JD6Y1** **E22LD6Y1** **E22KD6Y8**	**E22JDB6Y1** **E22LDB6Y1** **E22KDB6Y8**
7 Position 2 — 1 6 — 5 10 — 9 12 — 11 4 — 3 8 — 7	0 1 2 3 4 5 6 0 X 0 0 0 0 0 0 0 X 0 0 0 0 0 0 0 X 0 0 0 0 0 0 0 X 0 0 0 0 0 0 0 X 0 0 0 0 0 0 0 X		Lever Knob Key	**E22JD7Y1** **E22LD7Y1** **E22KD7Y8**	**E22JDB7Y1** **E22LDB7Y1** **E22KDB7Y8**
8 Position 2 — 1 6 — 5 10 — 9 14 — 13 4 — 3 8 — 7 12 — 11	0 1 2 3 4 5 6 7 0 X 0 0 0 0 0 0 0 0 X 0 0 0 0 0 0 0 0 X 0 0 0 0 0 0 0 0 X 0 0 0 0 0 0 0 0 X 0 0 0 0 0 0 0 0 X 0 0 0 0 0 0 0 0 X		Lever Knob Key	**E22JD8Y1** **E22LD8Y1** **E22KD8Y8**	**E22JDB8Y1** **E22LDB8Y1** **E22KDB8Y8**

Dimensions (mm)

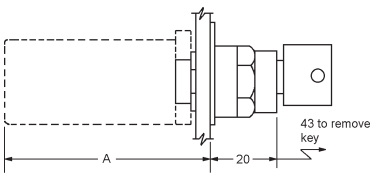
Lever operator



Knob operator



Key operator



No. of circuits	Dim. A
1 – 2	72mm
3 – 4	84mm
5 – 6	96mm
7 – 8	108mm

Notes:

17 *Lever and knob switches are fitted with black operators.*

18 *Key switches are fitted with standard lock key ref. 92239 with the key removable in all positions. For a non-standard lock refer to Eaton.*

Complete rotary cam selector switches *See notes 17 & 18*

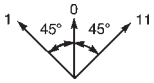
Lever operator

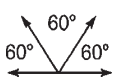
Knob operator

Key operator

Description terminal numbers	Circuit and sequence		Contact of poles	Number type	Operator Chrome bezel	Catalogue numbers Black bezel	
2 Position changeover	2—1 3	Pole 1	XO OX	1	Lever Knob Key	**E22JDP1** **E22LDP1** **E22KDP5**	**E22JDBP1** **E22LDBP1** **E22KDBP5**
	6—5 7	Pole 2	XO OX	2	Lever Knob Key	**E22JDR1** **E22LDR1** **E22KDR5**	**E22JDBR1** **E22LDBR1** **E22KDBR5**
	10—9 11	Pole 3	XO OX	3	Lever Knob Key	**E22JDS1** **E22LDS1** **E22KDS5**	**E22JDBS1** **E22LDBS1** **E22KDBS5**
	14—13 15	Pole 4	XO OX	4	Lever Knob Key	**E22JDT1** **E22LDT1** **E22KDT5**	**E22JDBT1** **E22LDBT1** **E22KDBT5**
2 Position changeover	2—1 3	Pole 1	XO OX	1	Lever Knob Key	**E22JDP51** **E22LDP51** **E22KDP53**	**E22JDBP51** **E22LDBP51** **E22KDBP53**
	6—5 7	Pole 2	XO OX	2	Lever Knob Key	**E22JDR51** **E22LDR51** **E22KDR53**	**E22JDBR51** **E22LDBR51** **E22KDBR53**
	10—9 11	Pole 3	XO OX	3	Lever Knob Key	**E22JDS51** **E22LDS51** **E22KDS53**	**E22JDBS51** **E22LDBS51** **E22KDBS53**
	14—13 15	Pole 4	XO OX	4	Lever Knob Key	**E22JDT51** **E22LDT51** **E22KDT53**	**E22JDBT51** **E22LDBT51** **E22KDBT53**
3 Position without off	2—1 6—5 4—3	Pole 1	XOO OXO OOX	2	Lever Knob Key	**E22JDV1** **E22LDV1** **E22KDV7**	**E22JDBV1** **E22LDBV1** **E22KDBV7**
	12—11 8—7 10—9	Pole 2	XOO OXO OOX				
3 Position with centre position off	2—1 4—3	Pole 1	XOO OOX	3	Lever Knob Key	**E22JDW1** **E22LDW1** **E22KDW7**	**E22JDBW1** **E22LDBW1** **E22KDBW7**
	6—5 8—7	Pole 2	XOO OOX				
	10—9 12—11	Pole 3	XOO OOX				

Switching angles



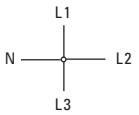
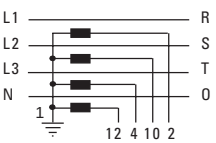
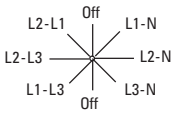
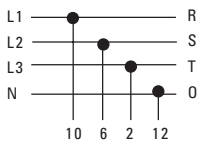


Overall dimensions. See page 19

Complete rotary cam selector switches *See notes 17 & 18*

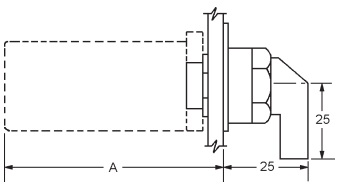
Description	Circuit and terminal numbers		Contact sequence	Number of poles	Operator type	Catalogue numbers Chrome bezel	Black bezel
3 Position with right hand position off	2—1, 4—3	Pole 1	X00 0X0	2	Lever Knob Key	**E22JDL1** **E22LDL1** **E22KDL7**	**E22JDBL1** **E22LDBL1** **E22KDBL7**
	6—5, 8—7	Pole 2	X00 0X0				
3 Position with left hand position off	2—1, 4—3	Pole 1	0X0 00X	2	Lever Knob Key	**E22JDM1** **E22LDM1** **E22KDM7**	**E22JDBM1** **E22LDBM1** **E22KDBM7**
	6—5, 8—7	Pole 2	0X0 00X				
4 Position without off	2—1, 6—5, 8—7, 4—3	Pole 1	X000 0X00 00X0 000X	1	Lever Knob	**E22JDN1** **E22LDN1**	**E22JDBN1** **E22LDBN1**

Ammeter and voltmeter rotary cam selector switches

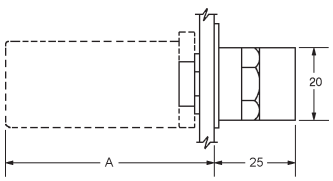
Description	Switch positions	Circuit and terminal numbers	Operator type	Catalogue numbers Chrome bezel	Black bezel
Ammeter switch (Single pole 4 current transformers)			Lever Knob	**E22JDAM1** **E22LDAM1**	**E22JDBAM1** **E22LDBAM1**
Voltmeter switch (3 Phase to phase and 3 phase to neutral)			Lever Knob	**E22JDVM1** **E22LDVM1**	**E22JDBVM1** **E22LDBVM1**

Dimensions (mm)

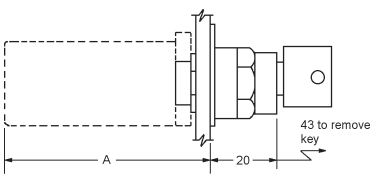
Lever operator



Knob operator



Key operator



No. of circuits	Dim. A
1 – 2	72mm
3 – 4	84mm
5 – 6	96mm
7 – 8	108mm

Notes:

17 *Lever and knob switches are fitted with black operators.*

18 *Key switches are fitted with standard lock key ref. 92239 with the key removable in all positions. For a non-standard lock refer to Eaton.*

Legend plates

Description	Size (mm)	Catalogue numbers
Aluminium (IP65)	30 x 45	**E22NE***
	40 x 45	**E22NF***

Description	Size (mm)		Catalogue numbers
Clip-in legend (IP65)	30 x 45	Legend carrier	**E22ND**
		Legend plate	**E22ND***
	40 x 45	Legend carrier	**E22PD**
		Legend plate	**E22PD***

30 x 45 *40 x 45*

Enclosure legend plate (Adhesive backing)	19 x 19	**E22NC***

Special engraving

Where non-standard engraving is required the maximum number of letters (including spaces) 3mm high that can be engraved per row is as follows:

E22ND	2 rows, 8 letters
E22NE	3 rows, 8 letters
E22NF	3 rows, 11 letters
E22PD	2 rows, 11 letters

** Add relevent suffix code from list below for required legend. Example E22NE11 = aluminium legend plate engraved "close".*

Legend	Code number	Legend	Code number	Legend	Code number	Legend	Code number
(Blank)	**36**	Inch reverse	**59**	Off On *(19)*	**42**	Slow	**32**
(Blank†)	**37**	Inch Run *(19)*	**60**	Off On *(20)*	**105**	Slower	**88**
Auto Off Hand	**49**	Inch Run *(20)*	**114**	On	**25**	Start	**33**
Clamp	**90**	Jog	**19**	Open	**26**	Start Inch *(19)*	**77**
Close	**11**	Jog for	**96**	Open Close *(19)*	**43**	Start Inch *(20)*	**119**
Down	**12**	Jog rev	**21**	Open Close *(20)*	**106**	Start Stop *(19)*	**47**
Emerg stop†	**13**	Left	**10**	Open Off Close	**53**	Start Stop *(20)*	**110**
Fast	**14**	Left Right *(19)*	**66**	Out	**27**	Stop†	**34**
For	**4**	Left Right *(20)*	**117**	Overload tripped	**98**	Stop reset†	**58**
Forward	**15**	Loc Rem *(19)*	**63**	Overload reset	**100**	Supply on	**61**
For Off Rev	**50**	Loc Rem *(20)*	**116**	Power on	**80**	Test	**83**
For Rev *(19)*	**38**	Low	**22**	Raise	**28**	Trip	**84**
For Rev *(20)*	**101**	Lower	**23**	Ready	**86**	Unclamp	**91**
Hand Auto *(19)*	**39**	Man Auto *(19)*	**67**	Reset	**29**	Up Down *(19)*	**48**
Hand Auto *(20)*	**102**	Man Auto *(20)*	**118**	Rev	**6**	Up Down *(20)*	**111**
Hand Off Auto	**51**	Man Off Auto	**68**	Reverse	**30**	Up	**35**
High	**16**	Motor run	**81**	Right	**79**	Special legend	**36x**
High Low *(19)*	**40**	Motor running	**56**	Run	**31**	Special legend†	**37x**
High Low *(20)*	**103**	Motor stop	**82**	Seq. Test *(19)*	**62**	Quote legend required.	
I	**65**	Motor stopped	**57**	Seq. Test *(20)*	**115**		
I O II	**121**	O†	**64**				
In	**17**	O I *(19)*	**122**				
Inch	**18**	O I *(20)*	**120**				
Inch forward	**76**	Off†	**24**				

Notes: *(19) For selector switches with left/right switch angle.*
(20) For selector switches with centre/right switch angle.

† *The standard colour field is black except those marked with a dagger which are red.*

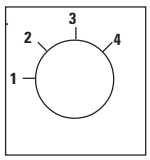
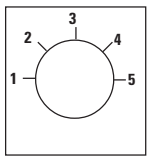
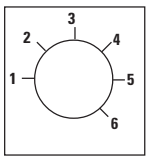
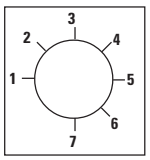
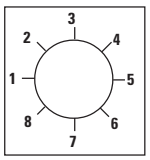
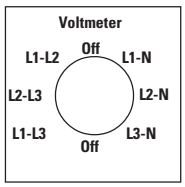
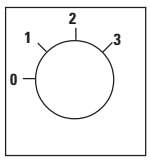
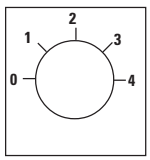
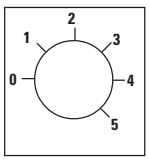
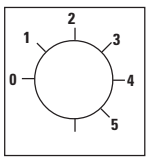
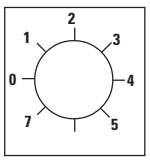
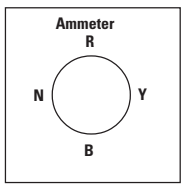
Push-Pull legend plates aluminium IP65 rated

Legend	Catalogue number
Pull on, Push off	**E22NP73**
Pull open, Push close	**E22NP74**
Pull start, Push stop	**E22NP75**
Pull up, Push down	**E22NP76**
Blank	**E22NP77**

Visual aid plate

Description		Catalogue number
	70mm not printed	**E22VA1**
	45mm not printed	**E22VA2**
	70mm printed "EMERGENCY STOP"	**E22VA8**

Legend plates for 4 – 8 position selector switches

Description	Catalogue numbers
Legend plates with standard text Size 45 x 45mm (E22NJP*) 60 x 60mm (E22NGP*) Black background, white letters.	 **E22NJP215**  **E22NJP216**  **E22NJP217**  **E22NJP218**  **E22NJP219**  **E22NGP220**  **E22NJP210**  **E22NJP211**  **E22NJP212**  **E22NJP213**  **E22NJP214**  **E22NGP221**

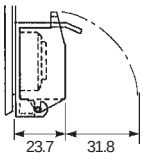
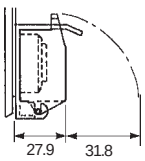
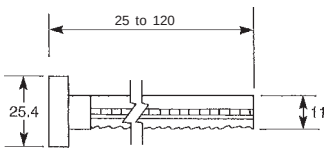
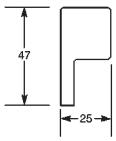
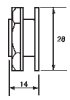
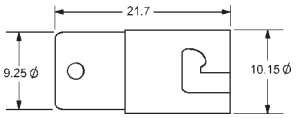
Description	Size (mm)	Catalogue numbers
Legend plates without text Black oneside, red reverse. White text	45 x 45 60 x 60	**E22NJP36** **E22NGP36**

Non-standard legends
If a legend is required that is not listed above, specify the blank catalogue number for the required size, add a suffix 'X' and detail engraving requirements. Use dashes to separate positions and quote background colour (black or red).
Example: E22NJP36X, OFF – PUMP 1 – PUMP 2 – PUMP 3 – PUMP 4, black background.

Accessories

	Description		Catalogue number
	Locating rings Gives additional anti-rotational feature. Panel notch required.	Pack of 10	**E22LRP**
	Operator plug To operate centre contact block on pushbuttons and momentary mushroom operators.		**E22BA2**
	Moulded black bezels For converting chrome type to moulded plastic.	For 25mm pushbuttons. For knob, lever, key selector switches	**E22AYB** **E22AZB**
	Push-on terminals To convert screw type terminal devices. Rated 300V maximum.	Pack of 10	**E22AT**
	Five way mounting adaptor For use with: Non-illuminating operators and mushroom operators Illuminated pushbuttons and mushroom operators Non-illuminating key, lever and knob type selector switches Illuminated lever and knob type selector switches		 **E22BA11** **E22BA11L** **E22BA12** **E22BA12L**

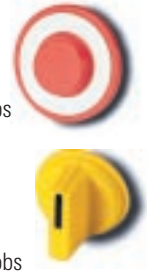
Accessories

	Description numbers		Catalogue dimensions (mm)	Overall (kg)	Weight
	Padlockable transparent cover. For flush & extended 25mm pushbuttons.		**E22PCM**		
	For extended 25mm pushbuttons. Enables N.C. circuit to be held open when in padlocked position.		**E22PCPM**		0.025
	Padlockable transparent cover. For use with 28mm mushroom operators, knob and key selector switches.		**E22BA9**		0.025
	Mechanical push. For use with pushbuttons and push-pulls only. Cut to required length. Pushbutton stroke 5.8mm.		**E22MRL**		
	Protective boot Forms oil and watertight seal to IP66. For flush & extended pushbuttons only	Red Green Black Clear	**E22BRM** **E22BGM** **E22BBM** **E22BCM**		0.015 0.015 0.015 0.015
	Mushroom shroud Protects against inadvertant operation. Suitable for all operators up to 40mm dia.	Half shroud Full shroud	**E22MS** **E22MSF**		0.05 0.05
	Hole plug Forms oil and water-tight seal (IP66) for unused panel hole.	Plastic Stainless steel	**E22BHP** **E22BA8**		0.015 0.03
	Bulb removal tool. To assist bulb removal on illuminated operators from front of panel		**E22BA3**		
	Handtool For cutting 22.5mm diameter hole Maximum sheet steel panel thickness 1.6mm		**E22BA5**		
	Octagonal box spanner. Ensures easy tightening of rear of panel mounting rigs on all operators.		**E22BA6**		
	Bulb extender For use with BA9s bayonet base bulbs. For use with illuminated selector and push-pull switches.		**E22BA4**		
	Hole Reducer Converts 30.5 mm hole in diecast enclosures to 22.5 mm		**E22BA14**		

Accessories (continued)

Description	Colour	Catalogue numbers Push-pull cap 29.5mm	40mm	Selector switch Levers		Selector switch Knobs	
Replacement caps, levers and knobs – Non-illuminated	Black	**E22AHS1**	**E22AH1**	**E22AV1**	**E22AV21**	**E22AX1**	**E22AX21**
	Red	**E22AHS2**	**E22AH2**	**E22AV2**	**E22AV22**	**E22AX2**	**E22AX22**
	Green	**E22AHS3**	**E22AH3**	**E22AV3**	**E22AV23**	**E22AX3**	**E22AX23**
	Yellow	**E22AHS4**	**E22AH4**	**E22AV4**	**E22AV24**	**E22AX4**	**E22AX24**
	White	**E22AHS5**	**E22AH5**	**E22AV5**	**E22AV25**	**E22AX5**	**E22AX25**
	Blue	**E22AHS6**	**E22AH6**	**E22AV6**	**E22AV26**	**E22AX6**	**E22AX26**
	Grey	**E22AHS7**	**E22AH7**	**E22AV7**	**E22AV27**	**E22AX7**	**E22AX27**
	Orange	**E22AHS8**	**E22AH8**	**E22AV8**	**E22AV28**	**E22AX8**	**E22AX28**
	Red marked EMERGENCY STOP	–	**E22AH2N8**	–	–	–	–
Illuminated	Clear	**E22AFS0**	**E22AF0**	**E22AW0**	**E22AW20**	**E22AR0**	**E22AR20**
	Red	**E22AFS2**	**E22AF2**	**E22AW2**	**E22AW22**	**E22AR2**	**E22AR22**
	Green	**E22AFS3**	**E22AF3**	**E22AW3**	**E22AW23**	**E22AR3**	**E22AR23**
	Yellow	**E22AFS4**	**E22AF4**	**E22AW4**	**E22AW24**	**E22AR4**	**E22AR24**
	White	**E22AFS5**	**E22AF5**	**E22AW5**	**E22AW25**	**E22AR5**	**E22AR25**
	Blue	**E22AFS6**	**E22AF6**	**E22AW6**	**E22AW26**	**E22AR6**	**E22AR26**
	Amber	**E22AFS9**	**E22AF9**	**E22AW9**	**E22AW29**	**E22AR9**	**E22AR29**
	Red marked EMERGENCY STOP	–	**E22AF2N8**	–	–	–	–

Caps Levers Knobs



Description	Colour	Catalogue numbers Standard lens	Lens for printed insert*	Glass lens	Lens for double pushbutton
Replacement lenses – indicating lights	Clear	**E22AE0**	**E22AG0**	**E22AC0**	**E22AE20**
	Red	**E22AE2**	**E22AG2**	**E22AC2**	**E22AE22**
	Green	**E22AE3**	**E22AG3**	**E22AC3**	**E22AE23**
	Yellow	**E22AE4**	**E22AG4**	–	–
	White	**E22AE5**	**E22AG5**	**E22AC5**	**E22AE25**
	Blue	**E22AE6**	**E22AG6**	**E22AC6**	**E22AE26**
	Amber	**E22AE9**	**E22AG9**	**E22AC9**	**E22AE29**

Standard lens Glass lens

Lens for printed insert Printed insert

* Printed insert	Catalogue no.	* Printed insert	Catalogue no.
Without marking	**E22AL5**	On	**E22AL5N25**
Motor run	**E22AL5N81**	Power on	**E22AL5N80**
Motor running	**E22AL5N56**	Supply on	**E22AL5N61**
Motor stopped	**E22AL5N57**	Special legend	**E22AL5N36X**
Off	**E22AL5N24**		

Spare keys

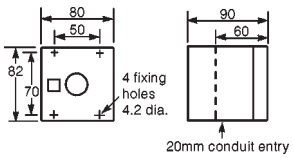
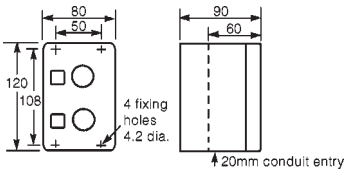
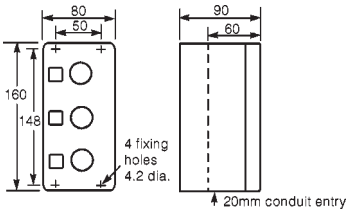
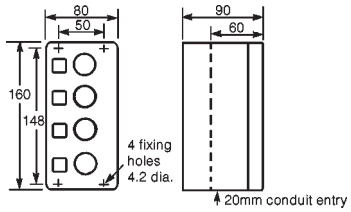
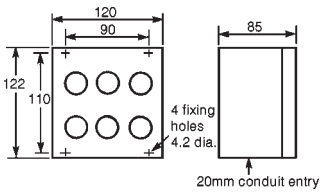
Description	Ref. no.	Catalogue numbers
2 Standard keys	92239	**E22KS2**
1 Master key (For all non-standard locks)	92	**E22KM92**

For spare keys of locks not listed please contact Eaton

Enclosures – polycarbonate

Main features

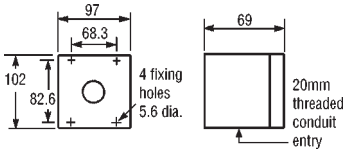
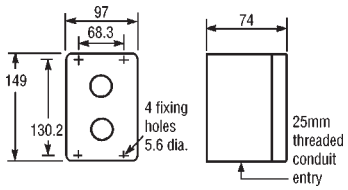
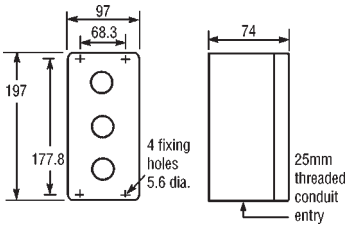
- ☐ Polycarbonate enclosures
- ☐ IP65 ingress protection
- ☐ Quick release stainless steel screws
- ▣ Double insulated
- ☐ Colour light grey

	Description	Usable depth	Catalogue numbers	Weight (kg)	Overall dimensions (mm)
	Single way				
	Grey base and grey lid	56mm	**E22CSP1**	0.1	
		86mm	**E22CDP1**	0.1	
	Grey base and yellow lid	56mm	**E22CSP1Y**	0.1	
		86mm	**E22CDP1Y**	0.1	
	Two way Mounting matrix 36mm	56mm	**E22CSP2**	0.2	
		86mm	**E22CDP2**	0.4	
	Three way Mounting matrix 36mm	56mm	**E22CSP3**	0.2	
		86mm	**E22CDP3**	0.4	
	Four way Mounting matrix 30mm	56mm	**E22CSP4**	0.2	
		86mm	**E22CDP4**	0.4	
	Six way Mounting matrix 36mm x 47mm	81mm	**E22CDP6**	0.6	

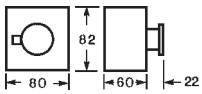
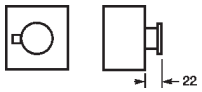
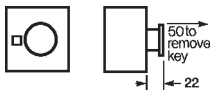
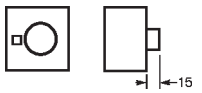
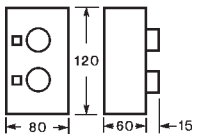
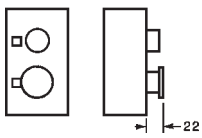
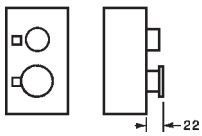
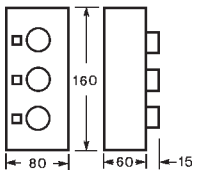
Enclosures – die cast aluminium

Main features

- ☐ Powder coated paint finish
- ☐ IP65 ingress protection
- ☐ Threaded conduit entry
- ☐ Colour light grey RAL 7032

	Description	Usable depth	Catalogue numbers	Weight (kg)	Overall dimensions (mm)
	Single way Grey base and grey lid	50mm	**E22CDD1**	0.05	
	Grey base and yellow lid	50mm	**E22CDD1Y**	0.05	
	Two way Mounting matrix 47mm	50mm	**E22CDD2**	0.65	
	Three way Mounting matrix 47mm	50mm	**E22CDD3**	0.76	

Assembled stations

Description	Operator	Button colour	Contact arrange-ment	Catalogue numbers Chrome bezel	Catalogue numbers Black bezel	Operator dimensions (mm)	Weight (kg)
Single way	40 mm mushroom	Red (spring return)	N.C. Yellow background	**E22AS105**	**E22ASB105**		0.2
	40 mm mushroom	Red (latch-in twist to release)	N.C. Yellow background	**E22AS106**	**E22ASB106**		0.2
	40 mm mushroom (latch-in key release) Yellow background (IP54)	Red	N.C.	**E22AS107**	**E22ASB107**		0.23
	Start (flush)	Green with legend	N.O.	**E22AS108**	**E22ASB108**		0.2
	Stop (extended)	Red with legend	N.C.	**E22AS109**	**E22ASB109**		0.2
Two way	Start (flush) Stop (extended)	Green Red	N.O. N.C.	**E22AS204**	**E22ASB204**		0.32
	▲ (flush) ▼ (flush)	Black Black	N.O. N.O.	**E22AS207**	**E22ASB207**		0.32
	Start (flush) Stop (40 mm mushroom spring return)	Green Red	N.O. N.C.	**E22AS205**	**E22ASB205**		0.32
	Start (flush) Stop (40 mm mushroom latch-in twist to release)	Green Red	N.O. N.C.	**E22AS206**	**E22ASB206**		0.37
Three way	Forward (flush) Stop (extended) Reverse (flush)	Black Red Black	N.O. N.C. N.O.	**E22AS304**	**E22ASB304**		0.5
	Open (flush) Stop (extended) Close (flush)	Black Red Black	N.O. N.C. N.O.	**E22AS305**	**E22ASB305**		0.5
	Up (flush) Stop (extended) Down (flush)	Black Red Black	N.O. N.C. N.O.	**E22AS306**	**E22ASB306**		0.5
	▲ (flush) ○ (extended) ▼ (flush)	Black Red Black	N.O. N.C. N.O.	**E22AS307**	**E22ASB307**		0.5

Technical data

Operator forces

Operation		Initial force (N)	Final force (N)
Pushbutton	25mm	2.25	5.6
	Mushroom	3	6.9
2 Position push/pull		16	0
3 Position push/pull	Push	0	22.3
	Pull	0	33.5
Single circuit contact block	E22B2 N.O. contact block	1	4.45
	E22B1 N.C. contact block	0.3	3.4
Dual circuit contact blocks	E22B20 2N.O. contact block	0.8	5.9
	E22B11 1N.O. + 1N.C contact block	0.6	5.4

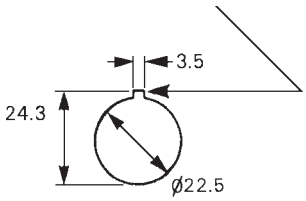
Operator torque

Operation		Initial torque (Nm)	Final torque (Nm)
Key, lever & knob selectors	Spring return	0.1	0.15
	Maintained	0.2	0.3

Mounting (mm)

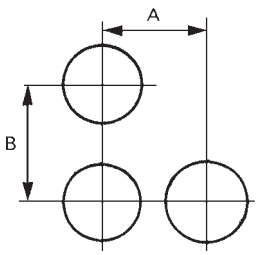
Description		Dimension
Mounting panel thickness – minimum		1
– maximum		6.35*
* The accessories alongside reduce the maximum panel thickness by the following amount.	Legend plates	1.25
	Locating ring	1.5
	Padlockable cover	2.4
	Rubber boots	1.3

Optional panel notch to provide anti-rotation.
Use E22LRP or E22LRM accessory



Mounting matrix – minimum (mm)

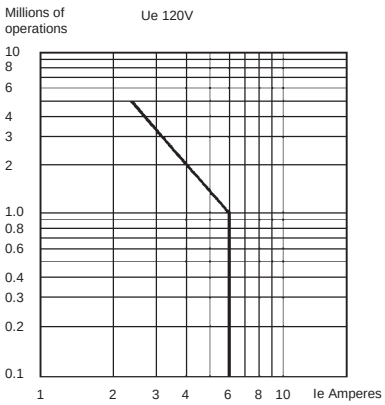
Description	3 Way mounting adaptor		5 Way mounting adaptor		
	Dim 'A'	Dim 'B'	Dim 'A' (1)	Dim 'A' (2)	Dim 'B'
All operators except those below	30	50	40	50	50
3 Position lever selector switches & 40mm operators	45	50	45	50	50
50mm operators	55	55	55	55	55
Pushbuttons assembled with boots or padlockable covers	35	50	40	50	50



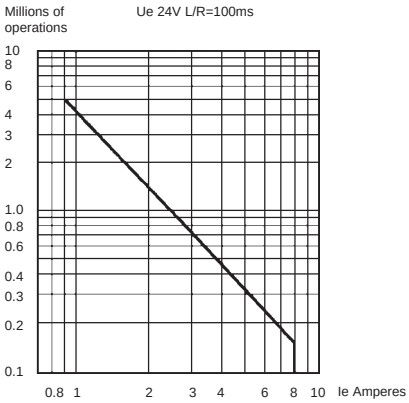
A *(1) Horizontal spacing for one 3 way & one 5 way mounting adaptor.*

A *(2) Horizontal spacing for two 5 way mounting adaptors.*

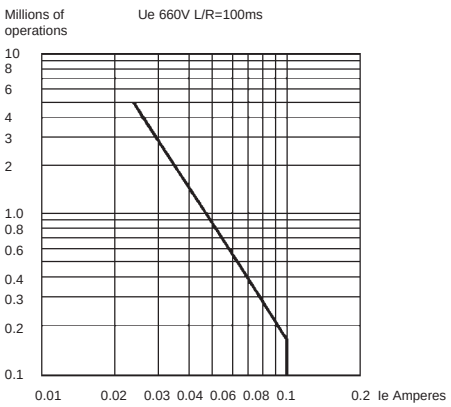
AC15 Electrical durability



DC13 Electrical durability



DC13 Electrical durability



Technical data

	Contact blocks	Pushbutton operators	Push/pull operators	Double headed operators
General				
Standards and approvals	IEC947-5-1, IEC337-1, BS4794, VDE0660, UL508, CSA22.2 no. 14, Lloyds			
Terminal markings	EN50013 (BS5581)	–	–	–
Ingress protection – IEC529*	–	IP65	1P65	–
– UL508 (NEMA)*	–	Type 4, 4x, 13	Type 4, 4x, 13	–
Protection against direct contact IEC529	IP20	–	–	–
Mechanical life span (no. of operations)	3,000,000	5,000,000	300,000	1,000,000
Operating frequency (operations per hour)	6,000	6,000	3,000	6,000
Weight	13g (single) 22g (double)	43g	32g	26g
Environment				
Pollution degree IEC947-1	3	3	3	3
Impulse withstand voltage IEC947-1	4kV	4kV	4kV	4kV
Operating ambient temperature – non-illuminated	–20 to +60°C	–20 to +60°C	–20 to +60°C	–20 to +60°C
– illuminated	–	–20 to +60°C	–20 to +60°C	–20 to +60°C
Vibration resistance 10 sweeps 10 - 500Hz		5g	5g	5g –
Shock resistance (shock duration 18ms)		30g	30g	30g –
Bump resistance 6ms 1000cycles	25g	25g	25g	–
Storage temperature	–40 to +80°C	–40 to +80°C	–40 to +80°C	–40 to +80°C
Mounting position	Any	Any	Any	Any
Operating altitude	2000m	2000m	2000m	2000m
Cabling capacity				
Number of conductors	2	–	–	–
Solid, stranded or flexible – Max wire size (mm^2)	2.5	–	–	–
– Min wire size (mm^2)	0.75	–	–	–

** Ingress protection provided by E22 component fitted to a suitable enclosure.*

Contact ratings – Contact blocks

Thermal current Ith	10A		
Insulation voltage Ui	690V		
Operating frequency limits	50 to 60Hz		
Adjacent contacts 'electrically separate'	Yes		
AC15 duty (AC11 to IEC337)	Ue	VA	Ie
Control of A.C. electromagnetic loads	48V	480	10A
	120V	720	6A
	240V	960	4A
	440V	880	2A
	660V	990	1.5A
DC13 duty (DC11 to IEC337)	Ue	W	Ie
Control of D.C. electromagnets	24V	192	8A
	48V	288	6A
	120V	120	1A
	220V	110	0.5A
	440V	110	0.25A
	660V	66	0.1A

Short circuit co-ordination

Conditional short circuit current Iq	1kA
Fuse type BS88 type gG	10A

UL and CSA ratings

Maximum rated voltage	600Vac
Switching capacity	
– Heavy pilot duty (A600)	6A ac
– Heavy pilot duty (Q600)	0.55A dc

Contact operation

Normally open (N.O.)	Slow make, break
Normally closed (N.C.)	Slow make break, positive action

Low power switching
(Operating under normal environmental conditions)

Minimum operational voltage (ac/dc)	5V
Minimum operational current (ac/dc)	1mA

Mushroom operators	Selector switch operators	Rotary cam selector switches	Transformer light source units	Non-transformer light source units	Indicating lights	Monoblock indicating lights
IEC947-5-1, IEC337-1, BS4794, VDE0660, UL508, CSA22.2 no 14, Lloyds						IEC337-1
–	–	EN50013 (BS5581)	EN50013 (BS5581)	EN50013 (BS5581)	EN50013 (BS5581)	EN50013 (BS5581)
IP65 Type 4, 4x, 13	IP65 Type 4, 4x, 13	IP65 Type 4, 4x, 13	– –	– –	IP65 Type 4, 4x, 13	– –
–	–	–	IP20	IP20	–	IP10
300,000	500,000	2,000,000	–	–	–	–
1,200	3,000	3,000	–	–	–	–
70g	55g (key) 43g (lever)	106g (4 circuit) 115g (6 circuit) 125g (8 circuit)	80g	14g	23g	21g
3	3	3	3	3	3	3
4kV	4kV	4kV	4kV	4kV	4kV	4kV
–20 to +60°C –20 to +60°C	–20 to +60°C –20 to +60°C	–20 to +60°C –	– –20 to +60°C	– –20 to +60°C	– –20 to +60°C	– –20 to +60°C
5g	5g	–	5g	5g	5g	–
30g	30g	30g†	30g	30g	30g	–
25g	25g	25g†	25g	25g	25g	–
–40 to +80°C	–40 to +80°C	–40 to +80°C	–40 to +80°C	–40 to +80°C	–40 to +80°C	–40 to +80°C
Any	Any	Any	Any	Any	Any	Any
2000m	2000m	2000m	2000m	2000m	2000m	2000m
–	–	2	2	2	–	2
– –	– –	1.5 0.75	2.5 0.75	2.5 0.75	– –	2.5 0.75

† Rotary cam selector switches having no more than 4 circuits.

Contact ratings – Rotary cam switches

Thermal current Ith	10A		
Insulation voltage Ui	500V		
Operating frequency limits	50-60Hz		
Adjacent contacts 'electrically separate'	Yes		
AC1 duty	Ue	VA	Ie
Resistive or low inductive loads	380V	3,800	10A
AC11 duty			
Control of A.C. electromagnets	240V	600	2.5A
	440V	660	1.5A
AC21 duty			
Switching of resistive loads, including moderate overloads	500V	5,000	10A
AC22 duty			
Switching of combined resistive or inductive loads, including moderate overloads	500V	5,000	10A
Short circuit co-ordination			
Conditional short circuit current Iq	3kA		
Fuse type BS88 type gG	10A		
Circuit breaker type	To be announced		

DC switching capacity

Number of series contacts	1	2	3	4	5	6	8	Amperes
	Voltage (V)							
DC1 resistive loads	24	48	70	95	120	144	190	10
	48	95	140	190	240	290	350	6
L/R<=1ms	60	120	180	240	300	360	450	2.5
	110	220	330	440	–	–	–	0.7
	220	440	–	–	–	–	–	0.3
	440	–	–	–	–	–	–	0.2
DC1 inductive loads	24	48	72	96	120	144	190	6
	30	60	90	120	150	180	240	3
L/R<=50ms	48	95	140	190	240	290	350	1
	60	120	180	240	300	360	450	0.7
	110	220	330	440	–	–	–	0.3

UL & CSA ratings

Maximum rated voltage			300V ac
Switching capacity, heavy pilot duty A300			3A ac
DOL motor load	3 phase	240V	1HP
	1 phase	120V	0.33HP
		240V	0.75HP

Technical data – Trigger action actuators

Description

The E22LTA2 is a latching, trigger-action, twist-to-release pushbutton actuator designed specifically for use as an Emergency Stop Switch.

The E22MGTA is a rectangular guard designed to prevent accidental or inadvertent actuation of the E22TLA actuator. It is also designed to permit easy knob rotation access for manually resetting the switch.

The E22CB1, E22CB11 & E22CB1E contact blocks are specially marked contact blocks indicating compliance with IEC 60947-5-1 Annex K.

Application

The E22LTA2 actuator and E22CB* contact blocks are intended to be the primary and/or one of several series-connected emergency stop switches in a control panel. The N.C. (normally closed), break electrical contacts are D.O.A. (direct opening action) which are designed to be forcibly opened by the movement of the actuator in the event that the contact should be tack welded etc.

Key features

- ★ Mushroom head button (40mm diameter) for easy actuation (per EN418 Section 4.4).
- ★ Safety red coloured button per ANSI Z535.1 and EN418 Section 4.4.3.
- ★ Manually resettable actuator.
- ★ Rectangular guard is coloured safety yellow per ANSI Z535.1 and provides yellow background for the actuator per EN418 Section 4.4.3.
- ★ All external pushbutton and guard materials have a V-0 flammability rating per UL94.
- ★ Contact blocks are A600/Q600 rated per UL508 and AC15/DC13 rated per IEC 60947-5-1.
  N.C. (normally closed), break contact blocks are positive opening or D.O.A. (direct opening action) in accordance with EN418 Section 4.1.2.
- ★ Suitable for isolation per IEC 60947-5-1.

Environmental ratings (actuator)

Ingress protection

UL (NEMA) 1, 2, 3, 3R, 4, 4X, 12 & 13 and IEC IP 65 when mounted on a flat surface of a similarly rated enclosure. Above ratings do not apply to applications where devices are mounted directly unto a machine without the use of a separate console or enclosure. If not installed in a suitable panel or enclosure, precautions must be taken to safeguard contact blocks against electrical contact or shock and from contamination from environmental or working conditions of the machine.

Operating temperature

–20° to +60°C

Storage temperature

–40° to +80°C

Altitude

2,000m

Humidity

Max 95% RH @ 60°C

Flammability

UL94 V-O rated

UV resistance

Shield actuator from excessive exposure to UV, and routinely perform a functional test of the emergency stop switch and inspect actuator for fading and cracking after every 500 hours of UV exposure.

Mechanical endurance ratings (actuator)

Life

100,000 cycles (actuation & release)

Frequency of operation

6 per minute

Vibration

5g, 0.7mm peak to peak, 10 sweeps, 10 to 500Hz

Shock

30g, 12ms

Bump

25g, 6ms for 1,000 cycles

Electrical ratings (contact blocks)

- ★ A600 & Q600 per UL508
- ★ AC15 & DC13 per IEC 60947-5-1

AC Life (AC15)

120Vac, 6A - 1,000k operations

DC Life (DC13)

24Vdc, 4A - 400k operations

N.C. Contacts

DOA (direct opening action) per IEC 60947-5-1

Short circuit co-ordination rating

1kA

Short circuit co-ordination fuse

GE Power Controls TIA 10, Red Spot type gG, 10A 660Vac 460Vdc, BS88-2, per IEC 60269-2-1

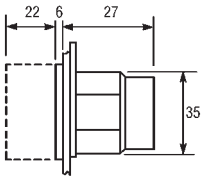
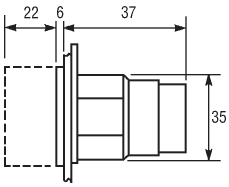
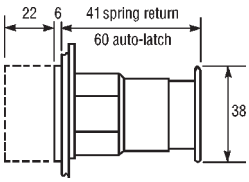
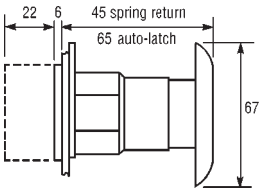
Standards & certifications

- ★ UL Listed E-Stop device per file # E217948
- ★ Certified to EN 60947-5-1 & EN 60947-5-5 per DEMKO certificate # 129648-01/A1
- ★ Certified to EN418 per DEMKO Certificate # 129648-02/A2
- ★ UL508 listed per file # E131568
- ★ CSA certified per file # LR68551

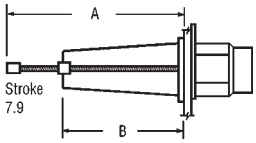
30.5mm operators – 91000T Series

Description	Page	Description	Page
Pushbutton operators	32	Roto-push pushbuttons	38
Mechanical push operators	32	Joystick controllers	39
Illuminated pushbuttons	33	Legend plates	40
Cylinder lock pushbuttons	33	Accessories	41
Contact blocks	33	Assembled pushbutton stations	43
Knob or lever operated selector switches	34	Emergency stop stations	43
Key operated selector switches	35	Aluminium alloy enclosures	44
Standard indicating lights	36	Technical data	45
Prestest Indicating lights	37		

Pushbutton operators

Description	Button colour	Catalogue numbers	Overall dimensions (mm)	Weight (kg)
Flush button	Black	**91000T101**		0.093
	Red	**91000T102**		0.093
	Green	**91000T103**		0.093
	Yellow	**91000T104**		0.093
	White	**91000T106**		0.093
	Blue	**91000T108**		0.093
Extended button	Black	**91000T111**		0.093
	Red	**91000T112**		0.093
	Green	**91000T113**		0.093
Padlockable, lockdown				
Fitted with 38mm mushroom push	Red	**91000TA45**		0.95
Complete flush operator				
Auto-latch	Red	**91000T2821**		0.95
Bare shaft operator				
For mushroom or palm push	Momentary, spring return	**91000T100**		0.095
	Auto-latch	**91000T140**		0.095
				
Operating pushes for bare shaft operators				
Mushroom 38.1mm	Black	**91000T281**		
	Red	**91000T282**		
	Green	**91000T283**		
	Yellow	**91000T284**		
	Blue	**91000T288**		
Palm 63.5mm	Black	**91000T291**		
	Red	**91000T292**		
	Green	**91000T293**		
Extended pushbutton	Red	**91000T2820**		

Mechanical push operators

	Description	Colour	Catalogue numbers	Overall dimensions (mm)	Weight (kg)
	Flush push, standard reach, 127mm	Black	**91000TA85**		0.015
		Green	**91000TA86**		0.015
		Red	**91000TA87**		0.015
	Flush push, long reach, 217mm	Black	**91000TA97**		0.015
		Green	**91000TA98**		0.015
		Red	**91000TA99**		0.015

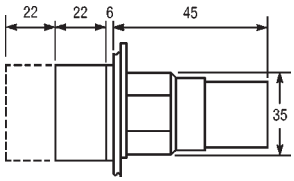
Dimension	A Min	A Max	B
Std. reach	35	127	8
Long reach	118	217	85

For base mounting contact block information see page 44

Illuminated pushbuttons BA9s bayonet fitting. For replacement bulbs see page 42.

Operator

Lens

	Description	Supply voltage 50/60Hz	Catalogue numbers	Overall dimensions (mm)	Weight (kg)
	Transformer type	110/120	**91000T411**		0.19
	6V 1W secondary.	220/240	**91000T412**		0.19
	Bulb supplied	380/415	**91000T413**		0.19
		440/480	**91000T414**		0.19
	Direct voltage				
	Supplied without bulb	6 to 240	**91000T441**		0.093
	BA9s bayonet bulbs (for use with 91000T441)				
	Filament type	6V (1W) flasher	**28-2225-26**		
		6.3V (1W)	**28-2225-72**		
		12V (1.2W)	**28-2225-29**		
		24V (1.2W)	**28-2225-30**		
		28V (1.12W)	**28-2225-73**		
		50V (1W)	**28-2225-31**		
		60V (1.2W)	**28-2225-32**		
		110V (2.2W)	**28-2225-24**		
	Neon type	110V (0.8mA)	**28-2225-48**		
		240V (1.5mA)	**28-2225-49**		

LED Bulbs see page 37

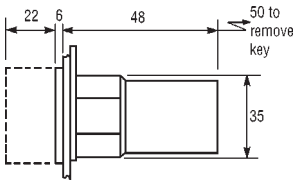
Plastic lens (for use with illuminated pushbuttons).

Colour	Catalogue numbers	Colour	Catalogue numbers	Colour	Catalogue numbers
Red	**91000TC21**	Amber	**91000TC43**	Clear	**91000TC25**
Green	**91000TC22**	Blue	**91000TC24**	White	**91000TC26**

Cylinder lock pushbuttons

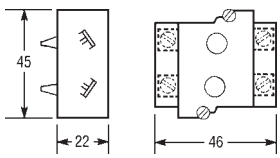
Operators (Supplied with the standard lock and 2 keys, key ref. H661).

Key position and pushbutton operation			Key removal positions	Catalogue numbers	Weight (kg)
Left	Centre	Right			
Lock-up	Free	Lock down	All	**91000T430**	0.185
Blocked	Free	Push to lock	C & R	**91000T437**	0.185



Special lock selection: Add the appropriate suffix code from page 35. eg 91000T430**H620**.

Contact blocks

Description	Catalogue numbers: One-hole mounting *	Overall dimensions (mm)	Weight (kg)
1 N.O. 1 N.C.	**91000T1**		0.025
2 N.O.	**91000T2**		0.025
2 N.C.	**91000T3**		0.025
1 N.C.	**91000T51**		0.025
1 N.O.	**91000T53**		0.025
2 N.O. 2 N.C.	**91000T44**		0.025
1 N.O. 1 N.C. make before break	**91000T55**		0.025

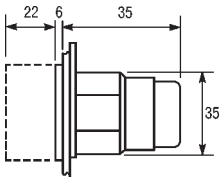
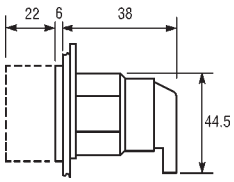
Note:

A maximum of 6 blocks (12 circuits) may be fitted to each operator except for 91000T44 where a maximum of 4 blocks (16 circuits) may be fitted.

** For base mounting contact blocks see page 44.*

Knob or lever operated selector switches

Bare shaft operator

Description	Cam code	Catalogue numbers	Overall dimensions (mm)	Weight (kg)
2-position				
Stayput	1	**91000T4011**		0.115
Spring return right to left	1	**91000T4081**		0.115
3-position				
Stayput	2	**91000T4022**		0.115
	3	**91000T4023**		0.115
	4	**91000T4024**		0.115
	6*	**91000T4026**		0.115
Spring return from left, stayput centre and right	2	**91000T4032**		0.115
	3	**91000T4033**		0.115
Spring return to centre from left and right	2	**91000T4042**		0.115
	3	**91000T4043**		0.115
Stayput left and centre, spring return from right	2	**91000T4052**		0.115
	3	**91000T4053**		0.115

Knob (for any operator)	**91000TKB**
Lever (for any operator)	**91000TLB**

Cam selection chart showing contact sequence

To determine the number of the cam you require and the right contact block select the contact sequence desired from table below. O = contacts open, X = contacts closed. The cam number is shown at top of column. The catalogue number of the appropriate contact block is shown at extreme left of table.

Catalogue numbers of contact block One-hole mounting	Base mounting	Circuit (see note (1) at foot of table)	2-position selector switch	3-position selector switch			
			Cam code no. 1	Cam code no. 2	Cam code no. 3	Cam code no. 4	Cam code no. 6 †
91000T1	**91000T6**	A N.C.	XO	OXO	OXX	XOO	XOO
		B N.O.	OX	OOX	OOX	OXO	OXO
91000T1	**91000T6**	A N.O.	OX	XOX	XOO	OXX	OOX
		B N.C.	XO	XXO	XXO	XOX	OOX
91000T2	**91000T7**	A N.O.	OX	XOX	XOO	OXX	OOX
		B N.O.	OX	OOX	OOX	OXO	OXO
91000T3	**91000T8**	A N.C.	XO	OXO	OXX	XOO	XOO
		B N.C.	XO	XXO	XXO	XOX	OOX

Switching angle.

60° between each position.

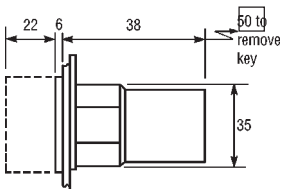
Note:

(1) Each contact block contains two contact circuits. The top set of contacts is identified as 'Circuit A' and the lower set as 'Circuit B' is indicated in the table. The chart shows the contact arrangements with the three contact blocks available and in each operator position. Additional contact combinations are obtainable by stacking contact blocks in tandem up to a maximum of 6 blocks (12 circuits).

† A maximum of 2 are to be used with cam 6. Rated fo A.C. only.

Key operated selector switches

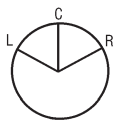
Operators (Supplied with the standard lock and 2 keys, key ref. H661)

	Description code	Cam removal	Key Vertical position	Catalogue numbers Horizontal mounting *	dimensions mounting *	Overall (kg) (mm)	Weight
	2-position						
	Stayput	1	Right & left	**91000T15113**	**91000T16113**		0.185
	Spring return right to left	1	Left only	**91000T15712**	**91000T15812**		0.185
							
	3-position						
	Stayput	2	Left, right	**91000T15227**	**91000T16227**		0.185
		3	& centre	**91000T15237**	**91000T16237**		0.185
		4		**91000T15247**	**91000T16247**		0.185
		6		**91000T15267**	**91000T16267**		0.185
	Spring return from left	2	Right &	**91000T15325**	**91000T16325**		0.185
		3	centre	**91000T15335**	**91000T16335**		0.185
	Spring return to centre from left and right	2	Centre	**91000T15424**	**91000T16424**		0.185
		3	only	**91000T15434**	**91000T16434**		0.185
	Spring return from right	2	Left &	**91000T16526**	**91000T16626**		0.185
		3	centre	**91000T16536**	**91000T16636**		0.185

* **Vertical mounting** means terminals are left & right of contact block.
Horizontal mounting means terminals are top & bottom of contact block. This allows close spacing of adjacent operators with easy access to terminals.

Alternative key removal position selection

To select an alternative key removal position change the last digit of the listed catalogue number with a code from the table below e.g. 91000T1522**6** is a 3 position stayput switch with key removal from left and centre.

Key removal position		Suffix
	Right	**1**
	Left	**2**
	Right and Left	**3**
	Centre	**4**
	Right and Centre	**5**
	Left and Centre	**6**
	All Positions	**7**

Note: *Select one suffix number only. Key removal in a spring return position is not available.*

Special lock selection

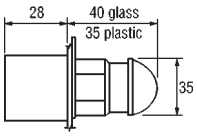
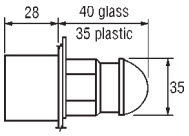
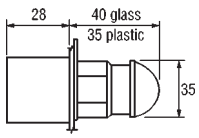
To select an alternative lock add the suffix code from the table below to the operator catalogue number e.g. 91000T15113**H621**

Special lock Suffix	Suffix
H620	**H654**
H621	**H663**
H634	**H675**
H635	**H683**
H639	**H688**
H643	–

Special locks are supplied with two keys. Extra keys may be ordered, refer to accessories page 42.

Standard indicating lights

Lamp units Bulbs supplied with units unless otherwise stated. *For replacement light bulbs see page 42*

	Description	Supply volts 50/60Hz	Catalogue numbers	Overall dimensions (mm)	Weight (kg)
	Transformer type	110/120	**91000T181N**		0.22
	6V 1W secondary BA9s	220/240	**91000T182N**		0.22
	bayonet bulb under rated by	380/415	**91000T183N**		0.22
	10% for longer life.	550/600	**91000T185N**		0.22
	Resistor type				
	120V 2.2W	110/120	**91000T201N**		0.112
	BA9s bayonet bulb	220/240	**91000T202N**		0.112
	Direct voltage unit (MCC/MBC)				
	Supplied without bulb. Suitable				
	for BA9s bayonet bulbs	6 to 240	**91000T197N**		0.11
	BA9s bayonet bulbs (for use with 91000T197N)				
	Filament type	6V (1W) flasher	**28-2225-26**		
		6.3V (1W)	**28-2225-72**		
		12V (1.2W)	**28-2225-29**		
		24V (1.2W)	**28-2225-30**		
		28V (1.12W)	**28-2225-73**		
		50V (1W)	**28-2225-31**		
		60V (1.2W)	**28-2225-32**		
		110V (2.2W)	**28-2225-24**		
	Neon type	110V (0.8mA)	**28-2225-48**		
		240V (1.5mA)	**28-2225-49**		
	Direct voltage unit (SBC)				
	Supplied without bulb. Suitable				
	for BA15d bayonet bulb	6 to 240	**91000T200N**		0.11
	BA15d bulbs (filament type)	6	**28-2225-18**		
	6 – 10 watt.	12	**28-2225-19**		
	For use with 91000T200N	24	**28-2225-20**		
		48	**28-2225-21**		
		130	**28-2225-22**		
		240	**28-2225-23**		

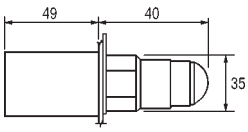
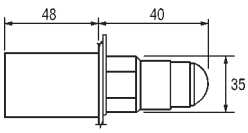
LED Bulbs see page 37

Lenses

	Colour	Catalogue numbers Plastic	Glass
Plastic	Red	**91000TC1N**	**91000TC7N**
	Green	**91000TC2N**	**91000TC8N**
	Amber	**91000TC19N**	**91000TC9N**
	Blue	**91000TC4N**	**91000TC10N**
	Clear	**91000TC5N**	**91000TC11N**
	White	**91000TC6N**	**91000TC12N**
Glass			

Prestest indicating lights

Lamp units For replacement light bulbs see page 42.

Description	Supply volts 50/60Hz	Catalogue numbers	Overall dimensions (mm)	Weight (kg)
Transformer type	110/120	**91000T221N**		0.29
6V 1W secondary	220/240	**91000T222N**		0.29
BA9s bayonet bulb	380/415	**91000T223N**		0.29
underrated by 10% for longer life				
Resistor type	110/120	**91000T231N**		0.185
120V 2.2W	220/240	**91000T240N**		0.185
BA9s bayonet bulb				
Direct voltage unit (MCC/MBC)				
Suitable for BA9s bayonet bulbs	6 to 240	**91000T230N**		0.175
BA9s bayonet bulbs (for use with 91000T230N)				
Filament type	6.3V (1W)	**28-2225-72**		
	12V (1.2W)	**28-2225-29**		
	24V (1.2W)	**28-2225-30**		
	50V (1W)	**28-2225-31**		
	60V (1.2W)	**28-2225-32**		
	110V (2.2W)	**28-2225-24**		
Neon type	110V (0.8mA)	**28-2225-48**		
	240V (1.5mA)	**28-2225-49**		

LED bulbs

Colour	Catalogue numbers Upto 60Vac/dc	120Vac	120Vdc	135Vac/dc
Blue	**E22LED*BN**	**E22LED120BA**	**E22LED120BD**	**E22LED135BD**
Green	**E22LED*GN**	**E22LED120GA**	**E22LED120GD**	**E22LED135GD**
Orange	**E22LED*ON**	**E22LED120OA**	**E22LED120OD**	**E22LED135OD**
Red	**E22LED*RN**	**E22LED120RA**	**E22LED120RD**	**E22LED135RD**
White	**E22LED*WN**	**E22LED120WA**	–	**E22LED135WD**
Yellow	**E22LED*YN**	**E22LED120YA**	**E22LED120YD**	**E22LED135YD**

** Add voltage code alongside to complete catalogue number*

Voltage code

Voltage	Code
10Vac – 6Vdc	**006**
12Vac – 12Vdc	**012**
24Vac – 24Vdc	**024**
35Vac – 35Vdc	**035**
48Vac – 48Vdc	**048**
60Vac – 60Vdc	**060**

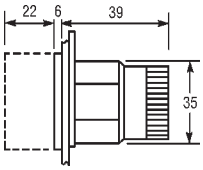
Lenses

Plastic

Glass

Colour	Catalogue numbers Plastic	Glass
Red	**91000TC21**	**91000TC13N**
Green	**91000TC22**	**91000TC14N**
Amber	**91000TC43**	**91000TC15N**
Blue	**91000TC24**	**91000TC16N**
Clear	**91000TC25**	**91000TC17N**
White	**91000TC26**	**91000TC18N**

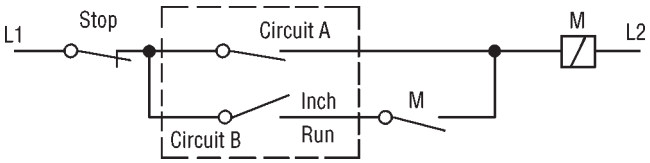
Roto-push pushbutton (a combined selector switch and pushbutton)

Description colour	Button Vertical	Catalogue numbers Horizontal mounting	dimensions mounting	Overall (kg) (mm)	Weight
Black		**91000T241***	**91000T251***		0.128
Green		**91000T243***	**91000T253***		0.128

** Complete the catalogue number by adding the respective cam code number from the table below. Example: 91000T241**11** is a 2 position roto-push for use as shown below.*

Typical application run-inch, start-inch

2 position roto-push 91000T24111 + 91000T1



With the roto-push sleeve turned to Inch depression of the push energises coil M through circuit A only so long as the push is pressed i.e. the motor will inch. With the roto-push sleeve turned to Run, the roto-push contact connected to the maintaining contact of M through circuit B is permanently closed, thus when the push is pressed (circuit A) M will close and maintain itself and the motor will run.

Cam selection chart showing contact sequence

O = contacts open, X = contacts closed. The catalogue number of the appropriate contact block is shown at extreme left of table.

Catalogue number of contact block		Button position	Circuit †	2 position operators								3 position operators		
				Cam code number										
One hole mounting	Base mounting			1	2	3	4	5	6	10	11	7	8	9
91000T1	**91000T6**	N	A N.C.	XX	XX	XO	XX	XX	XO	XX	XX	XXX	XOX	XOO
		N	B N.O.	OO	OO	OX	OX	OX	OX	OX	OX	OXX	OXO	OOX
		D	A N.C.	XO	XO	OO	OO	XO	XO	OX	OO	OXO	OOX	XOO
		D	B N.O.	XO	XX	XX	XX	OX	XX	OX	OX	OXX	OXX	OOX
91000T1§	**91000T6§**	N	A N.O.	OO	OO	OX	OO	OO	OX	OO	OO	OOO	OXO	OOX
		N	B N.C.	XX	XX	XO	XO	XO	XO	XO	XO	XOO	XOX	XXO
		D	A N.O.	OX	OX	XX	XX	OX	OX	XO	XX	XOX	XXO	OXX
		D	B N.C.	OX	OO	OO	OO	XO	OO	XO	XO	XOO	XOO	XXO
91000T2	**91000T7**	N	A N.O.	OO	OO	OX	OO	OO	OX	OO	OO	OOO	OXO	OOX
		N	B N.O.	OO	OO	OX	OX	OX	OX	OX	OX	OXX	OXO	OOX
		D	A N.O.	OX	OX	XX	XX	OX	OX	XO	XX	XOX	XXO	OXX
		D	B N.O.	XO	XX	XX	XX	OX	XX	OX	OX	OXX	OXX	OOX
91000T3	**91000T8**	N	A N.C.	XX	XX	XO	XX	XX	XO	XX	XX	XXX	XOX	XOO
		N	B N.C.	XX	XX	XO	XO	XO	XO	XO	XO	XOO	XOX	XXO
		D	A N.C.	XO	XO	OO	OO	XO	XO	OX	OO	OXO	OOX	XOO
		D	B N.C.	OX	OO	OO	OO	XO	OO	XO	XO	XOO	XOO	XXO

Note: *Cam codes 6 & 7 are for ac use only.*

† *Each contact block contains two contact circuits. The top set of contacts is identified as 'circuit A' and the lower set as 'B'. The table shows contact arrangement of each contact block with the operating button in normal and depressed positions and in each rotary sleeve position. Additional combinations are obtainable by stacking contact blocks in tandem.*

§ *These contact blocks are the same as the ones above except rotated 180° when assembled to the operator.*

Switching angle: 60° N = Button in free or normal position D = Button depressed

Joystick controllers

Eight circuit
Non-latched operator

- ☐ Supplied with 4 position gate fitted
- ☐ 3 additional gates supplied which allows conversion to 2, 3 or 8 positions. (T1030, T1050, T1020)
- ☐ Up to eight switching positions
- ☐ Up to twelve circuits.
- ☐ Each circuit N.O. or N.C. required a.c. or d.c.

Description	Catalogue numbers Without latch:	With off position latch:
Spring return only	**91000T450**	**91000T460**
Field adjustable spring return to stayput	**91000T451**	**91000T461**

Contact blocks

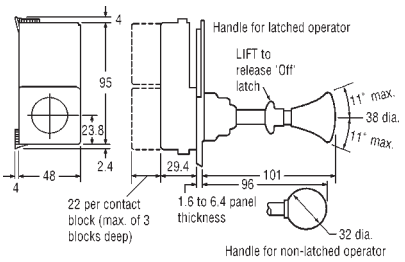
Description	Catalogue numbers
1 N.O. – N.C.	**91000T1**
2 N.O.	**91000T2**
2 N.C.	**91000T3**
1 N.O. 1N.C. make before break	**91000T55**

Legend plates

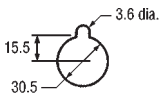
Description	Catalogue numbers
Blank	**91000TJS1**
Engraved	**91000TJS2**
Hole plug	**91000TA700**

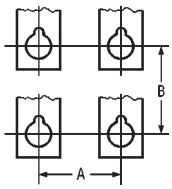
Positioning gate 91000T1010 is fitted as standard to each operator

Overall dimensions (mm)



Panel drilling dimensions (mm)





With controllers mounted adjacent to each other
A = 101.6 B = 111.1

With 91000T pushbuttons or indicating light mounted adjacent to joystick controller
A = 60.3 B = 95.2

The arrows shown in the 'Handle positions' column A indicates the handle positions and movements available when the indent mark on the gate is adjacent to the letter A on the handle assembly base casting. (No indent mark is provided on gates 91000T1010 and T1020).

Gate profile	Handle position A	B	C	D	Catalogue numbers
					91000T1010
					91000T1020
					91000T1030
					91000T1040
					91000T1050
					91000T1060
					91000T1070
					91000T1080
					91000T1090

Gate profile	Handle position A	B	C	D	Catalogue numbers
					91000T1100
					91000T1110
					91000T1120
					91000T1130
					91000T1130*
					91000T1140
					91000T1150
					91000T1150*
					91000T1160

** These positioning gates are identical with the one immediately above them. The handle positions shown against these profiles are obtained when the positioning gate is fitted with the indent mark not visible i.e. in contact with the common gate.*

Legend plates

Medium

Large

Legend	Catalogue numbers Medium	Large
	91000T	91000T
Auto off hand	M49	J49
(Blank)	M36	J36
(Blank)§	M37	J37
(Blank)	M95†	J95†
(Blank)§	M96†	J96†
Close	M11	J11
Down	M12	J12
Emerg Stop§	M13	–
Emergency Stop§	–	J13
Fast	M14	J14
For Off Rev	M50	J50
For Rev	M38	J38
Forward	M15	J15
Hand Auto	M39	J39
Hand Off Auto	M51	J51
High	M16	J16
High Low	M40	J40
I	M65	J65
In	M17	J17
Inch	M18	J18
Inch For	M20	–
Inch Forward	–	J20
Inch Rev	M21	–
Inch Reverse	–	J21

Legend	Catalogue numbers Medium	Large
	91000T	91000T
Inch Run	M41	J41
Inch Safe Run	M52	J52
Jog	M19	J19
Left	M73	J73
Left Right	M74	J74
Local Off		
Remote	M66	J66
Local Remote	M63	J63
Low	M22	J22
Lower	M23	J23
Man Auto	M67	J67
Man Off Auto	M68	J68
Motor Run	M58	J58
Motor Running	M56	J56
Motor Stop§	M59	J59
Motor Stopped	M57	J57
O§	M64	J64
Off§	M24	J24
Off On	M42	J42
On	M25	J25
Open	M26	J26
Open Close	M43	J43
Open Off Close	M53	J53
Out	M27	J27
Power On	M55	J55

Legend	Catalogue numbers Medium	Large
	91000T	91000T
Raise	M28	J28
Raise Lower	M76	J76
Ready	M78	J78
Reset	M29	J29
Reverse	M30	J30
Right	M79	J79
Run	M31	J31
Run Inch	M44	J44
Safe Run	M45	J45
Seq. Test	M62	J62
Slow	M32	J32
Slow Fast	M84	J84
Slow Off Fast	M85	J85
Start	M33	J33
Start Inch	M46	J46
Start Stop	M47	J47
Stop§	M34	J34
Stop Reset§	M88	J88
Stop (Turn barrel to release)§	M90	–
Supply On	M61	J61
Test	M60	J60
Up	M35	J35
Up Down	M48	J48
Up Off Down	M54	J54

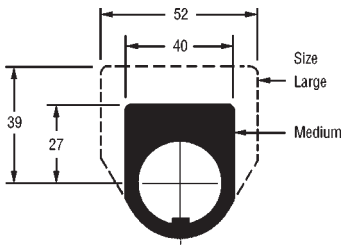
The standard colour field is black, except for those legends marked § for which the standard colour is red. Legends marked thus † are of brass. All other legends are of aluminium.

Non-standard legends

If a legend not quoted above is required, give the blank catalogue number for the size/colour and add the suffix 'X' to the code, indicating (e.g. by dashes not to be reproduced on the plate) the number of positions to be catered for, e.g. M36X JET-OFF-SPRAY (medium, black, 3-position).
The following table gives the maximum number of letters of a certain size which can be engraved on standard legend plates.

Dimensions (mm)

Note: *Two large size legend plates cannot be mounted one above the other on standard enclosures.*



Type	Letter size (mm) 1.6		3.2		4.8		6.4		8		9.5		12.7	
	No.of lines	No.of letters	No.of lines	No.of letters	No.of lines	No.of letters	No.of lines	No.of letters	No.of lines	No.of letters	No.of lines	No.of letters	No.of lines	No.of letters
Medium	3	24	2	12	1	8	1	6	1	4	1	4	–	–
Large	6	30	4	15	3	10	2	7	2	5	1	5	1	3

Accessories

	Description		Catalogue numbers
Padlock attachments			
	Padlock attachment for stop button. Permits locking N.C. contacts in open position, prevents operation of button		**91000TA2**
	Padlock attachment with hinged transparent flap, for flush or extended pushbuttons, and knob-operated selector switches		**91000TA38**
Boots			
	Protective boot for flush pushbutton operators	Blue Black Red Green Yellow	**91000TA46** **91000TA47** **91000TA48** **91000TA49** **91000TA50**
	Protective boot for mushroom and palm pushbutton operators. Not suitable for use with 91000T140	Black	**91000TA88**
	Protective boot for extended pushbutton operators	Black Red Green	**91000TA3** **91000TA4** **91000TA10**
Guards and shrouds			
	Guard sleeve for flush pushbutton		**91000TA12**
	Guard sleeve for mushroom head operator. Chrome finish. Prevents accidental operation. Not suitable for use with 91000T140		**91000TA6**
	Guard sleeve for illuminated pushbutton. Prevents accidental operation		**91000TA15**

Lever operator

Description		Catalogue number
	Lever for release of a staydown pushbutton or roto-push operator.	**91000TA13**

Accessories

Trip and reset attachment

Description	Catalogue number
Trip and reset attachment. Use with two pushbutton operators and one or more contact blocks. The contact blocks are mounted under the reset or stop push which latches in the depressed position until released by depression of the trip push.	**91000TA1**

Replacement light bulbs *

Type	Voltage	Used on	Catalogue numbers
BA9s flasher filament	6	91000T181N – 185N 91000T221N – 223N 91000T411 – 414	**28-2225-26**
BA9s filament	6.3	91000T181N – 185N 91000T221N – 223N 91000T411 – 414	**28-2225-72**
BA9s filament	110/120	91000T201N,T202N 91000T231N,T240N	**28-2225-24**

Note:

* *Replacement bulbs are for use with current series 'B' operators. For replacement bulbs for series 'A' (round bezelled) operators contact Eaton Limited.*

Bulb removal tool

BA9s and BA15d type bulbs	**91000TA65**

Other accessories

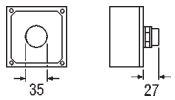
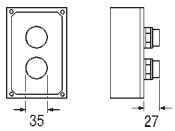
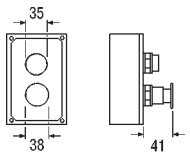
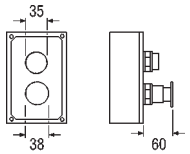
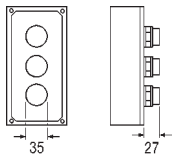
Description	Catalogue numbers
Wobble stick complete with locking ring for mounting on a flush pushbutton. Designed for emergency or hurried operation	**91000TA5**
Plug for unused hole in cover Finish in light grey (RAL 7032)	**91000TA7**
Protective washer, used as substitute when legend plate is not required. Prevents locking ring from scratching paint.	**91000TA8**
Double ended box spanner for easy installation of control units on panel. (Will not fit over selector switch levers).	**E22CW**
Box spanner Notched to fit over selector switch levers.	**91000TA95**

Description	Catalogue numbers
Boot spanner. For easy installation of operators fitted with protective boots.	**91000TA96**
2 spare keys for special locks, state key 'H' code as suffix e.g.91000TA151H620	**91000TA151H***
2 spare keys for standard lock ref. no. H661	**91000TA152**
6-32 stacking screws for series B operators	**91000TA79** (pack of 10)
Octagonal bezel with 26 T.P.I. to convert round style pushbutton operators to octagonal	**91000TA202**
Terminal boots. Provides IP20 (fingerproof protection) for terminals	**91000TA81** (pack of 10)

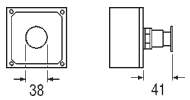
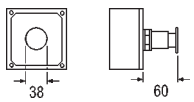
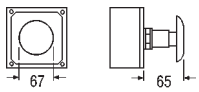
Assembled pushbutton stations

Features and characteristics

- ☐ Oiltight stations
- ☐ IP65 ingress protection
- ☐ Surface mounted die-cast aluminium enclosures
- ☐ Threaded conduit entry
- ☐ Powder coat painted light grey (RAL7032)

Description		Operator	Contact arrangement	Catalogue numbers	Weight (kg)	Operator dimensions (mm)
Single way station		Start	N.O. – N.C.	**91000T3516**	0.68	
Two way stations		Start Stop	N.O. – N.C. N.C.	**91000T3525**	0.98	
		Start Mushroom stop (spring return)	N.O. – N.C. N.C.	**91000T3526**	0.98	
		Start Mushroom stop (auto latch)	N.O. – N.C. N.C.	**91000T3630**	0.98	
Three way stations		Forward Reverse Stop	N.O. – N.C. N.O. – N.C. N.C.	**91000T3532**	1.3	
		Open Close Stop	N.O. – N.C. N.O. – N.C. N.C.	**91000T3614**	1.3	
		Up Down Stop	N.O. – N.C. N.O. – N.C. N.C.	**91000T3615**	1.3	

Emergency stop stations

	38mm dia. red mushroom push. Momentary spring return. Yellow lid.	N.C.	**91000T3553**	
	38mm dia. red mushroom push. Stop-lock, twist barrel to release. Yellow lid.	N.C.	**91000T3554**	
	63mm dia. red palm push. Stop lock, twist barrel to release. Yellow lid.	N.C.	**91000T3555**	

Note: *For enclosure dimensions see page 44.*

Aluminium alloy enclosures

Description Painted light grey (RAL7032) textured finish	Operator capacity per enclosure	Catalogue numbers One contact block deep:	Two contact blocks deep:
	1	**91000TN1**	**91000TN11**
	1†	**91000TN100**	–
	2	**91000TN2**	**91000TN12**
	3	**91000TN3**	**91000TN13**
	4	**91000TN4**	**91000TN14**

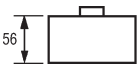
3 operator enclosure

† *Enclosure has yellow lid*

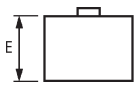
Accessories

Description			Catalogue numbers
Spacers	Used for base mounting contact blocks. One required for each operator plus additional spacer may be required to make up enclosure depth.	One contact block deep Two contact blocks deep	**91000TA21** **91000TA22**
Base mounting contact blocks			
	1 N.O. 1 N.C.		**91000T6**
	2 N.O.		**91000T7**
	2 N.C.		**91000T8**
	1 N.C.		**91000T52**
	1 N.O.		**91000T54**

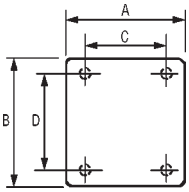
Dimensions (mm)



1,2,3 & 4 unit sizes
single contact
block depth



1,2,3 & 4 unit sizes
double contact
block depth



Enclosure size	Dimensions A	B	C	D	E	Conduit entry	Fixing holes	Weight (kg)
1 unit	97	102	68.3	82.6	69	20	5.6	0.050
2 unit	97	149	68.3	130.2	74	25	5.6	0.65
3 unit	97	197	68.3	177.8	74	32	5.6	0.775
4 unit	100	248	68.3	225	76	32	5.6	0.95

Technical data

Standards and approvals

IEC 947-5-1. MTTA*
CSA C22-2 no. 14, UL508

Ingress protection (IP ratings to IEC144 (BS5420))

IP65
IP66, NEMA 4 on pushbuttons when fitted with a rubber boot
IP65 on enclosures

Max. frequency of operations

All pushbuttons: 6000 ops/hr.
Key and lever selector switch: 3000 ops/hr.
Auto-latch devices: 1200 ops/hr.

Mechanical life

Pushbuttons: 10×10^6 operations
Contact blocks: 10×10^6 operations
Prestest units: 1×10^6 operations
Lever & key sel. sw.: 0.25×10^6 operations
Twist to release p/btns: 0.3×10^6 operations

Climatic conditions

Operating: Max 60°C at 95% RH.
Temp. –17°C to +66°C
Altitude 2000 metres
Storage: Max. 60°C at 95% RH.
Temp. –40°C to +80°C

Shock resistance

Shock duration: 20 ms ⊕ 5g

Electrical ratings

Rated insulation: Ui = 660V ac or dc
Rated thermal: Ith = 10A
Short circuit (IEC947-5-1): 1000A with a 6A (NIT) fuse (to BS88)
NEMA, UL rating: A600, P600
AC load life duty cycle 1200 ops/hr
10A 110V pf 0.4 - 1×10^6 operations
5A 250V pf 0.4 - 1×10^6 operations
2A 660V pf 0.4 - 1×10^6 operations

Switching capacity

AC15 rated make/break (11 x Ie at 1.1 x Ue)
6A 120V pf 0.7
4A 240V pf 0.7
2A 660V pf 0.7

DC13 rated make/break (1.1 x Ie at 1.1 x Ue)
1.0A 120V L/R ⊕ 0.95 at 300ms
0.5A 240V L/R ⊕ 0.95 at 300ms
0.1A 660V L/R ⊕ 0.95 at 300ms
10A 110V pure resistive

Light units

Transformers will withstand short circuit for 1 hour per IEC947-5-1.
Bulbs average life:
Transformer type = 20,000 hrs.
Resistor/direct voltage type = 2,500 hrs min. at rated voltage.

Low voltage switching

Conical shaped points or "reliability nibs" improve performance in dry circuit, corrosive, fine dust and other contaminated atmospheres. Under normal environmental conditions, the minimum operational voltage is 5V and the minimum operational current is 1mA, ac/dc.

Contact operation

Slow make and break. All normally closed contacts have positive opening operation. i.e. normally closed contacts are forced open in the event of contact weld or spring breakage.

Terminal marking

Dual marking system 1 – 2 for normally closed 3 – 4 normally open to meet BS5472 (Cenelec EN50 005) and N.C. – N.O. moulded in the contact block to meet the NEMA requirements.

Terminal clamps

Terminals are saddle clamp types for 1 x 0.5mm˝ to 2 x 3mm˝ conductors.

Panel thickness

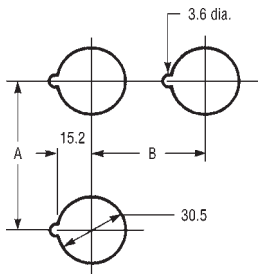
Maximum = 8mm including legend plate.
Minimum = 1.6mm.

*M.T.T.A. (Machine Tool, Trades Association)

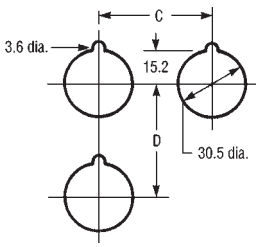
A range of pushbutton operators to meet the requirements of M.T.T.A. standard "Electrical Equipment of Machine tools and other industrial machines and equipment for the automobile industry" are included in the 91000T range.

Mounting matrix

Legend plate	A	B	C	D
Medium	57	45	45	57
Large	57	57	57	57



Horizontal mounting



Vertical mounting

Vertical mounting means terminals are left & right of contact block. Horizontal mounting means terminals are top & bottom of contact block. This allows close spacing of adjacent operators with easy access to terminals.

Stacklights – E26 Series

Description	Page	Description	Page
Product description	48	Technical data	54
Catalogue number selection guide	48	Application data	54
Light and xenon strobe modules	49	Mounting options and dimensions	55
Accessories	50	Dimensions	56
LEDs - Cluster or cylindrical	53		

Product description

The E26 Stacklight unit is a modular system that provides illuminated and audible status indication in all directions. Easily assembled plug-in modular units include constant, flashing and strobe light units, as well as mono-tonal, bitonal, intermittent alarm systems. Stacklights may be assembled in a variety of configurations, which are identified in the Maximum Configurations table below. Numerous lamp, colour and mounting options further enhance the Stacklight's versatility.

Light module

Light modules

Available in a variety of colours for both incandescent lamps and LED lamps. To maximise illumination and light dispersion, incandescent units include an opal white diffuser while LED diffusers are clear. See page 49.

Xenon strobe

Sets are similar to standard lens/diffuser units, except each set consists of two lens units. The lower unit includes the electronics and is permanently fused to the upper unit which contains the Xenon lamp. Xenon units may be placed in any position in a complete Stacklight unit. They will flash 60 times per minute when used with a standard or flashing base. See page 49.

Standard base and top cover

Standard Stacklight base

For use with incandescent or standard LED for steady, non-flashing illumination or with flashing LEDs for flashing illumination. Bases include terminal block for wiring, stacklight cover and gasket. See page 50.

Flashing base and top cover

Flashing Stacklight base

Allows configuration of each light in the stack for either steady or 60 times per minute flashing illumination. Flashing circuit for use with incandescent lamps only. (Maximum allowable number of light modules is 2 at 12V, 4 at 24V and 6 at 48V and above.) See page 50.

For flashing LEDs use standard base with flashing LED light module.

Alarm

Alarms

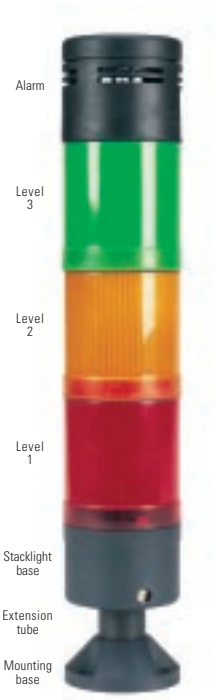
May be fitted to the top of a complete Stacklight unit or directly to the Stacklight bases, if desired. Available in three versions, each with adjustable sound levels. See page 51.

Features

- Modular construction
- Wide variety of lens colours
- Variety of lamp types and voltages
- Mono-tonal, bi-tonal and intermittent alarm systems

Benefits

- Combination of visible and audible alarms
- Modular components reduce inventory requirements, increase flexibility
- Steady and flashing modes allow one light to signal multiple conditions
- No-tools assembly permits easy lamp replacement



Complete Stacklight module

Catalogue number selection

Complete Stacklight modules

★ Stacklights accept a maximum of 6 incandescent or LED light modules or 2 Xenon flasher modules and can be mounted in any position on the stack.

★ Alarm units are mounted in the top most position only.

Maximum configurations

Incandescent or LED modules	Xenon modules	Alarm modules	Max. number of modules
6	–	–	6
5	–	1	6
4	1	–	5
3	1	1	5
2	2	–	4
1	2	1	4

Light and xenon strobe modules (includes lens, diffusers and bulbs unless otherwise noted)

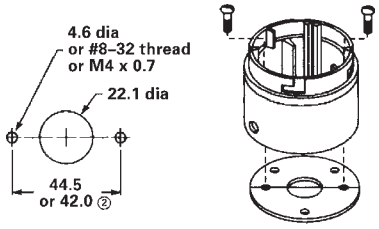
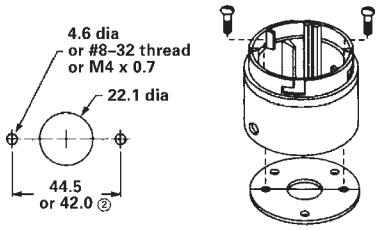
- Light modules include lens diffusers which provide even illumination and eliminate hot spots.
- Xenon strobes emit a bright attention-getting white flashing light. Flash rate = 60/min.
- Xenon strobe modules occupy two positions in the Stacklight assembly.

Light/LED module

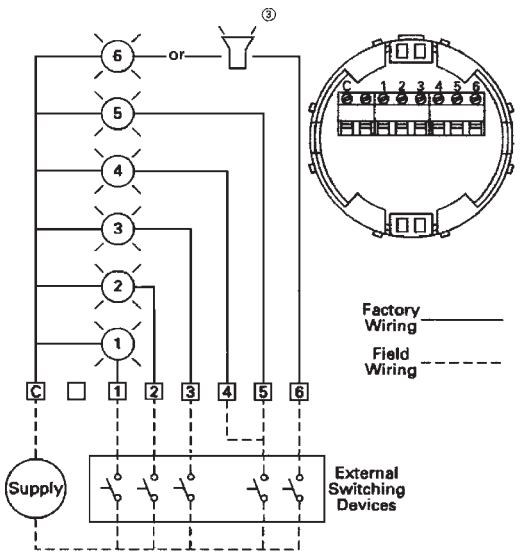
LED/Lamp voltage	Lens colour	Incandescent Catalogue numbers Steady or Flashing	Cluster LED Catalogue numbers Steady	Flashing	Cylindrical LED Catalogue numbers Steady only	Xenon Catalogue numbers Flashing
Without bulb or LED	Red	**E26B2**	**E26BR**	**E26BR**	**E26BR**	–
	Green	**E26B3**	**E26BG**	**E26BG**	**E26BG**	–
	Yellow	**E26B4**	**E26BY**	**E26BY**	**E26BY**	–
	Blue	**E26B6**	**E26BB**	**E26BB**	**E26BB**	–
	Amber	**E26B9**	**E26BA**	**E26BA**	**E26BA**	–
	Clear	**E26B0**	**E26BW**	**E26BW**	**E26BW**	–
12V ac/dc	Red	**E26B2V1**	**E26BRV1**	**E26BEV1**	**E26BR1V1**	**E26BX2V1**
	Green	**E26B3V1**	**E26BGV1**	**E26BUV1**	**E26BG1V1**	**E26BX3V1**
	Yellow	**E26B4V1**	**E26BYV1**	**E26BVV1**	**E26BY1V1**	**E26BX4V1**
	Blue	**E26B6V1**	**E26BBV1**	**E26BKV1**	**E26BB1V1**	**E26BX6V1**
	Amber	**E26B9V1**	**E26BAV1**	**E26BZV1**	**E26BA1V1**	**E26BX9V1**
	Clear	**E26B0V1**	**E26BWV1**	**E26BMV1**	**E26BW1V1**	**E26BX0V1**
24V ac/dc	Red	**E26B2V2**	**E26BRV2**	**E26BEV2**	**E26BR1V2**	**E26BX2V2**
	Green	**E26B3V2**	**E26BGV2**	**E26BUV2**	**E26BG1V2**	**E26BX3V2**
	Yellow	**E26B4V2**	**E26BYV2**	**E26BVV2**	**E26BY1V2**	**E26BX4V2**
	Blue	**E26B6V2**	**E26BBV2**	**E26BKV2**	**E26BB1V2**	**E26BX6V2**
	Amber	**E26B9V2**	**E26BAV2**	**E26BZV2**	**E26BA1V2**	**E26BX9V2**
	Clear	**E26B0V2**	**E26BWV2**	**E26BMV2**	**E26BW1V2**	**E26BX0V2**
48V ac/dc	Red	**E26B2V3**	**E26BRV3**	**E26BEV3**	**E26BR1V3**	**E26BX2V3**
	Green	**E26B3V3**	**E26BGV3**	**E26BUV3**	**E26BG1V3**	**E26BX3V3**
	Yellow	**E26B4V3**	**E26BYV3**	**E26BVV3**	**E26BY1V3**	**E26BX4V3**
	Blue	**E26B6V3**	**E26BBV3**	**E26BKV3**	**E26BB1V3**	**E26BX6V3**
	Amber	**E26B9V3**	**E26BAV3**	**E26BZV3**	**E26BA1V3**	**E26BX9V3**
	Clear	**E26B0V3**	**E26BWV3**	**E26BMV3**	**E26BW1V3**	**E26BX0V3**
120V ac *	Red	**E26B2V4**	**E26BRV4**	**E26BEV4**	**E26BR1V4**	**E26BX2V4**
	Green	**E26B3V4**	**E26BGV4**	**E26BUV4**	**E26BG1V4**	**E26BX3V4**
	Yellow	**E26B4V4**	**E26BYV4**	**E26BVV4**	**E26BY1V4**	**E26BX4V4**
	Blue	**E26B6V4**	**E26BBV4**	**E26BKV4**	**E26BB1V4**	**E26BX6V4**
	Amber	**E26B9V4**	**E26BAV4**	**E26BZV4**	**E26BA1V4**	**E26BX9V4**
	Clear	**E26B0V4**	**E26BWV4**	**E26BMV4**	–	**E26BX0V4**
240V ac *	Red	**E26B2V5**	**E26BRV5**	**E26BEV5**	–	**E26BX2V5**
	Green	**E26B3V5**	**E26BGV5**	**E26BUV5**	–	**E26BX3V5**
	Yellow	**E26B4V5**	**E26BYV5**	**E26BVV5**	–	**E26BX4V5**
	Blue	**E26B6V5**	**E26BBV5**	**E26BKV5**	–	**E26BX6V5**
	Amber	**E26B9V5**	**E26BAV5**	**E26BZV5**	–	**E26BX9V5**
	Clear	**E26B0V5**	**E26BWV5**	**E26BMV5**	–	**E26BX0V5**

* Incandescent bulbs are ac/dc rated, LEDs are ac rated only.

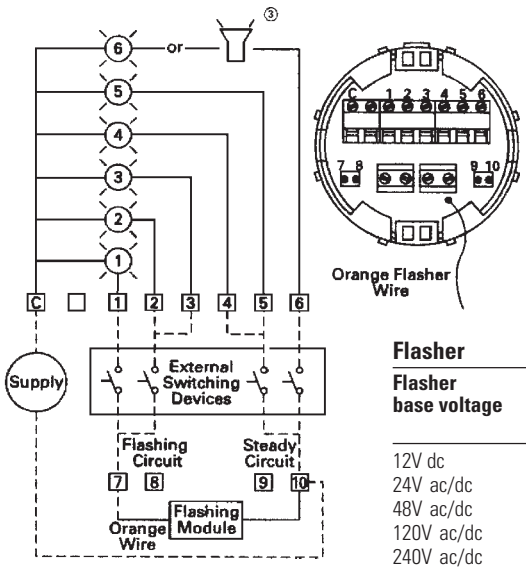
Accessories

	Description	Voltage	Catalogue numbers	Approximate dimensions (mm) ①
	Standard base For use with steady incandescent or steady/ flashing LED	12V ac/dc to 240V ac/dc	**E26BL**	 Drill 2 holes in Stacklight base to 4.3 mm. Mount Stacklight with M4 screws. Tighten to torque of 0.79 Nm.
	Flashing base Enables configuration of incandescent light modules for steady or flashing operation	12V dc 24V ac/dc 48V ac/dc 240V ac/dc 120V ac/dc	**E26BFV1** **E26BFV2** **E26BFV3** **E26BFV4** **E26BFV5**	 Drill 2 holes in Stacklight base to 4.3 mm. Mount Stacklight with M4 screws. Tighten to torque of 0.79 Nm.

Standard base



Flashing base



Flasher

Flasher base voltage	Max. Allowable no. of light modules
12V dc	2
24V ac/dc	4
48V ac/dc	6
120V ac/dc	6
240V ac/dc	6

Notes

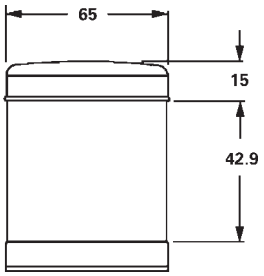
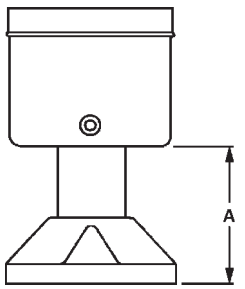
① Bases also suitable for mounting with extension tubes listed on page 51.

② Stacklight base and gasket are supplied as standard with two sets of base mount holes. One set with centre-to-centre spacing of 44.5 mm and another set with centre-to-centre spacing of 42 mm.

③ Audible alarm units must be wired via the steady circuit on flashing base units.

√ Bases are supplied with top cover.

Accessories (continued)

	Description	Voltage	Catalogue numbers	Approximate dimensions (mm)
	Audible alarms – IP20 Volume adjustment range: 64 dB to 90 dB typical current draw (mA):			
	Mono-tonal			
	4.5 mA	12V ac/dc	**E26BQV1**	
	12.6 mA	24V ac/dc	**E26BQV2**	
	9.4 mA	48V ac/dc	**E26BQV3**	
	11.5 mA	120V ac/dc	**E26BQV4**	
	5.1 mA	240V ac/dc	**E26BQV5**	
	Bi-Tonal			
	4.5 mA	12V ac/dc	**E26BNV1**	
	12.6 mA	24V ac/dc	**E26BNV2**	
	9.4 mA	48V ac/dc	**E26BNV3**	
	11.5 mA	120V ac/dc	**E26BNV4**	
	5.1 mA	240V ac/dc	**E26BNV5**	
	Intermittent			
	4.5 mA	12V ac/dc	**E26BPV1**	
	12.6 mA	24V ac/dc	**E26BPV2**	
	9.4 mA	48V ac/dc	**E26BPV3**	
	11.5 mA	120V ac/dc	**E26BPV4**	
	5.1 mA	240V ac/dc	**E26BPV5**	
	Extension tubes – Black anodised aluminium For use with standard mounting base or 3/4" NPT threaded hub –			
	Extension "A":			
	20 mm extension	–	**E26BHA**	
	160 mm extension	–	**E26BJA**	
	360 mm extension	–	**E26BKA**	
	760 mm extension	–	**E26BMA**	
	Mounting bases			
	Standard 3-hole mounting base	–	**E26S108**	
	Standard 4-hole mounting base	–	**E26S109**	

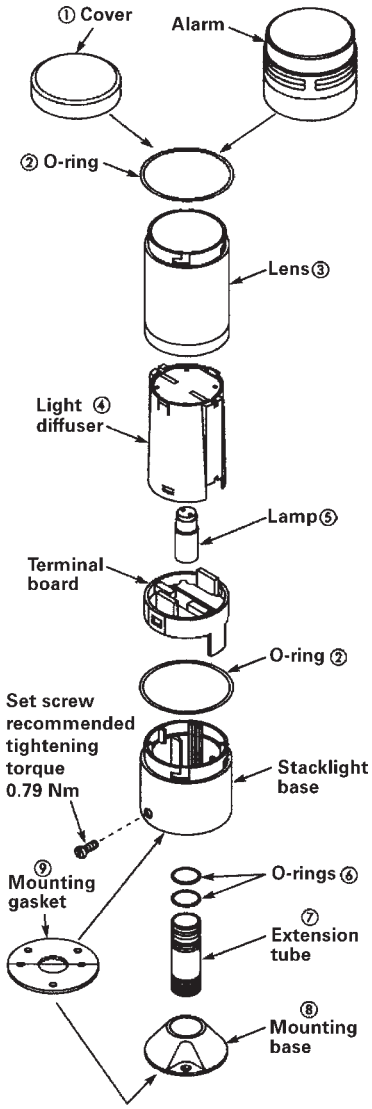
Assembled dimensions (mm)

Tube extension	Height A
20	45
160	185
360	385
760	785

Accessories (continued)

Description	Notes	Diagram	Catalogue numbers
Replacement mounting gasket	Normally included with Stacklight base	9	**E26S105**
Replacement lens O-ring	Normally included with light modules	2	**E26S106**
Replacement extension tube O-rings	Normally included with extension tubes	6	**E26S107**
Replacement cover	Normally included with Stacklight base	1	**E26S68**
Replacement lamps	12V 24V 48V 120V 240V	5	**E26S8** **E26S9** **E26S10** **E26S11** **E26S12**
Replacement Xenon strobe dual high (Does not include lenses)	12V ac/dc 24V ac/dc 48V ac/dc 120V ac 240V ac	4	**E26S33** **E26S34** **E26S35** **E26S36** **E26S37**
Replacement lenses	Clear Red Green Yellow Blue Amber	3	**E26S38** **E26S39** **E26S40** **E26S41** **E26S42** **E26S43**
Replacement diffusers	White – normally supplied with incandescent light modules	4	**E26S31**
	Clear – normally supplied with LED light modules	4	**E26S32**
Lamp removal tool	For E26 and E22 incandescent lamps		**E22BA3**

Typical Stacklight assemblies (exploded view



LEDs – Cluster or cylindrical

Voltage	Colour	Catalogue numbers Cluster LEDs Steady	Flashing	Cylindrical LEDs Steady Only
12V ac/dc	Red	**E26S15**	**E26S48**	**E26S110**
	Green	**E26S19**	**E26S53**	**E26S114**
	Yellow	**E26S23**	**E26S58**	**E26S112**
	Blue	**E26S27**	**E26S63**	**E26S115**
	White	**E26S71**	**E26S75**	**E26S116**
	Amber	**E26S79**	**E26S84**	**E26S111**
24V ac/dc	Red	**E26S16**	**E26S49**	**E26S117**
	Green	**E26S20**	**E26S54**	**E26S121**
	Yellow	**E26S24**	**E26S59**	**E26S119**
	Blue	**E26S28**	**E26S64**	**E26S122**
	White	**E26S72**	**E26S76**	**E26S123**
	Amber	**E26S80**	**E26S85**	**E26S118**
48V ac/dc	Red	**E26S17**	**E26S50**	**E26S124**
	Green	**E26S21**	**E26S55**	**E26S128**
	Yellow	**E26S25**	**E26S60**	**E26S126**
	Blue	**E26S29**	**E26S65**	**E26S129**
	White	**E26S73**	**E26S77**	**E26S130**
	Amber	**E26S81**	**E26S86**	**E26S125**
120V ac/dc	Red	**E26S18**	**E26S51**	**E26S138**
	Green	**E26S22**	**E26S56**	**E26S142**
	Yellow	**E26S26**	**E26S61**	**E26S140**
	Blue	**E26S30**	**E26S66**	**E26S143**
	White	**E26S74**	**E26S78**	–
	Amber	**E26S82**	**E26S87**	**E26S139**
240V ac/dc	Red	**E26S44**	**E26S52**	–
	Green	**E26S45**	**E26S57**	–
	Yellow	**E26S46**	**E26S62**	–
	Blue	**E26S47**	**E26S67**	–
	White	**E26S101**	**E26S102**	–
	Amber	**E26S83**	**E26S88**	–

Technical data

Standards and certifications

CE 60947-5-1
UL 508 – file #E131568
cUL C22.2 No. 14 – file #E131568

Ingress protection

Stacklight base and light units: IP65, NEMA 4, 4X and 13
Alarm units: IP20, NEMA 1

Electrical shock protection

Stacklight base and light unit: IP2X
Alarm units: IP0X

Mechanical ratings

Shock (IEC 68-2-27): 11 mS, 15g
Vibration (IEC 68-2-6): 10 sweeps 10 to 150 Hz, 2g
Bump (IEC 68-2-29): 1000 pulses, 6 mS, 15g

Climate conditions

Operating: maximum 40°C at 95% RH,
temperature –20° to 60°C
Storage: Temperature –40° to 80°C

Materials

Cover: Polycarbonate
Lenses: Polycarbonate
Stacklight base: Nylon
Extension tubes: Aluminium
Mounting base: Zinc die cast

Terminals

2.5 – 0.05 mm^2 for single conductors and 0.75 – 0.14 mm^2 for two conductors of the same size. Do not mix solid and stranded wire in the same terminal.
Recommended tightening torque is 0.5 – 0.6 Nm.

Electrical ratings

Insulation voltage (Ui): 690V
Operational voltage (Ue): 250V
Impulse withstand voltage (Uimp): 1.5 kV

Bulb specifications

Incandescent lamp type: BA15d
Maximum lamp wattage: 6W
Bulbs – average life:
Incandescent: 7,000 to 12,000 hrs.
Xenon flasher: 20,000 hrs.
LED: 60,000 to 100,000 hrs.

LED/Incandescent comparison

Incandescent lamps

Average operating life of 7,000 hours
Each lamp can be used with any colour lens
Low cost results in short term savings

LED lamps

Average operating life of 100,000 hours
Low power consumption
Extended life results in long-term savings

Application data

E26 Stacklight incandescent lamps

Type of light	Lamp used	Approximate current, mA per light	Theoretical lamp life, hours as applied
12V	BA15d	417	7,000
24V	BA15d	208	7,000
48V	BA15d	104	7,000
110 – 140V	BA15d	36 – 50	7,000
220 – 260V	BA15d	23 – 27	12,000

E26 Xenon flasher

Model	Voltage	Current (cont.)	Lamp life
12V	DC	460 mA	20,000
	AC	780 mA	20,000
24V Strobe	DC	190 mA	20,000
	AC	320 mA	20,000
48V	DC	100 mA	20,000
	AC	150 mA	20,000
120V	AC	60 mA ①	20,000
240V	AC	30 mA ①	20,000

① Represents average current draw, 1.6A peak for 120V and 0.8 peak at 240V.

E26 Continuous/flashing Stacklight LED

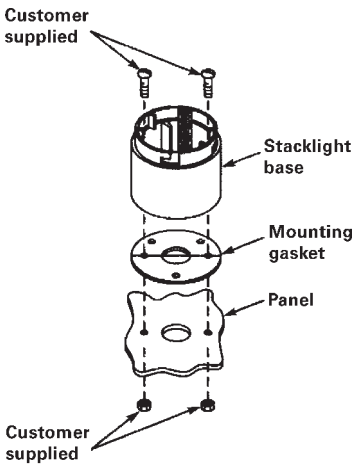
Type of light	Colour	Cluster LED Approximate current, mA at rated volts	Cylindrical LED Approximate current, mA at rated volts	Theoretical lamp life, hours as applied
12V ac/dc	Red	92	92	100,000
	Amber	92	92	100,000
	Yellow	92	92	100,000
	Green	60	60	80,000
	Blue	60	60	60,000
	White	60	60	60,000
24V ac/dc	Red	47	47	100,000
	Amber	47	47	100,000
	Yellow	47	47	100,000
	Green	59	59	80,000
	Blue	59	59	60,000
	White	59	59	60,000
48V ac/dc	Red	25	25	100,000
	Amber	25	25	100,000
	Yellow	25	25	100,000
	Green	18	18	80,000
	Blue	31	31	60,000
	White	31	31	60,000
60V ac/dc	Red	25	25	100,000
	Amber	25	25	100,000
	Yellow	25	25	100,000
	Green	18	18	80,000
	Blue	17	17	60,000
	White	17	17	60,000
120V ac/dc	Red	24	24	100,000
	Amber	24	24	100,000
	Yellow	24	24	100,000
	Green	17	17	80,000
	Blue	16	16	60,000
	White	16	16	60,000

Note:
Published theoretical lamp lives are based on ideal laboratory conditions and should be used for comparison only. Actual life may be shorter due to various application conditions.

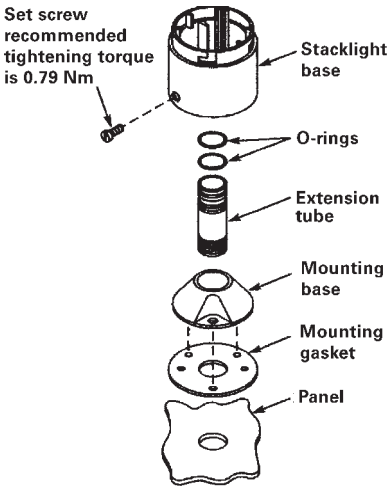
Mounting options and dimensions (mm)

Stacklight bases may be mounted without the use of extension tube or mounting base. If additional height is required, choose 20 to 760 mm extension tubes that fit between the mounting base and the Stacklight base. The extension tubes are threaded with 3/4" NPT threads, allowing for direct connection to conduit fittings or threaded holes without the use of a mounting base.

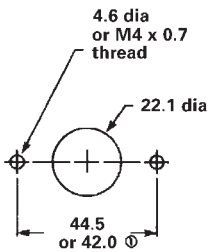
Base mounting



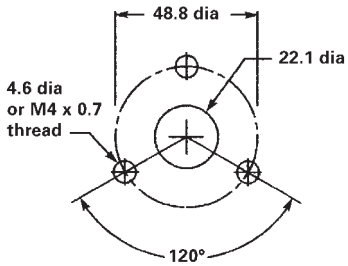
Utilising extension tube and mounting base



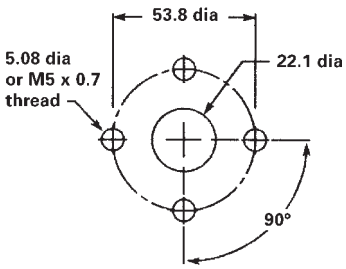
Base mounting



3-hole mounting for E26S108



4-hole mounting for E26S109



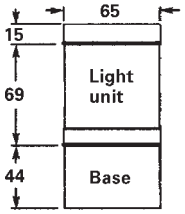
Note

① Stacklight base and gasket are supplied as standard with two sets of base mount holes.
One set with centre-to-centre spacing of 44.5 mm and another set with centre-to-centre spacing of 42 mm.

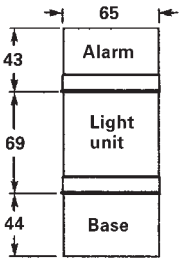
Approximate dimensions (mm)

One-light unit Stacklight

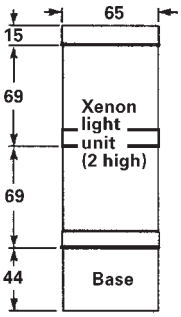
Standard



With alarm

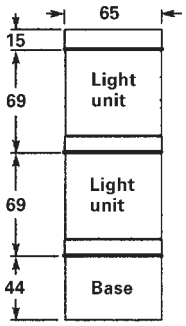


With Xenon flasher

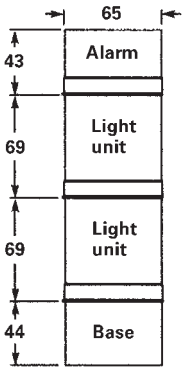


Two-light unit Stacklight

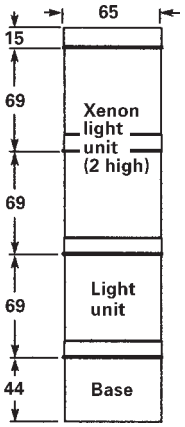
Standard



With alarm

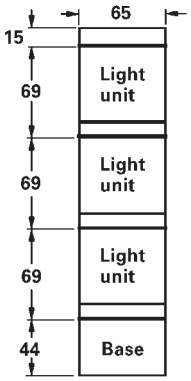


With Xenon flasher

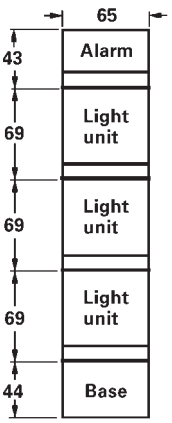


Three-light unit Stacklight

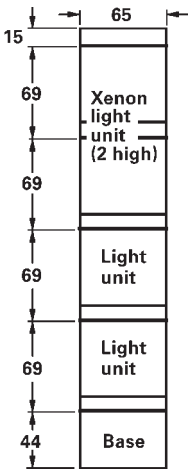
Standard



With alarm

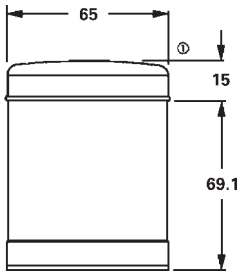


With Xenon flasher

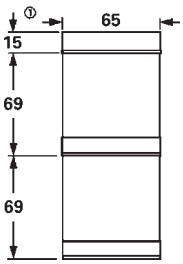


Light modules

Standard



Xenon



Note

① Cover included with Stacklight base.

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