

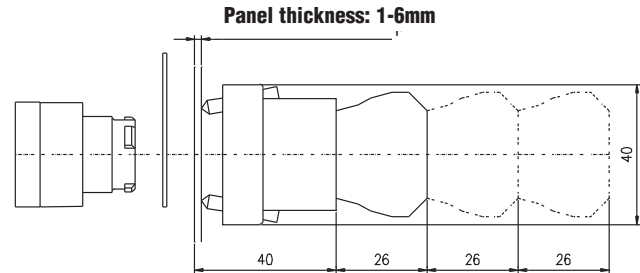
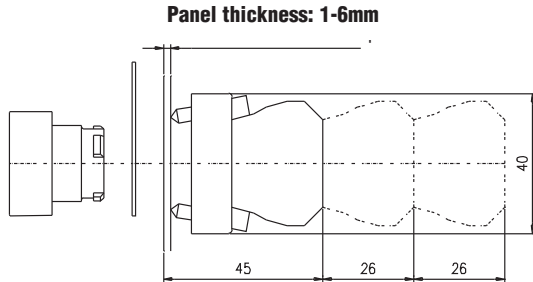
# 22 mm Plastic Pilot Devices Specifications

## Assembly information

These pushbuttons and indicator lights are supplied with the appropriate contact blocks, unless otherwise indicated. Use these drawings as a guide to make sure there is adequate clearance behind the panel.

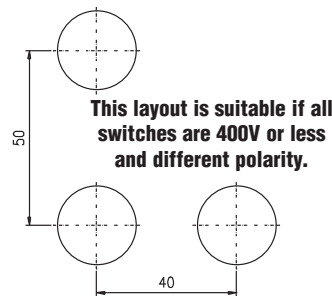
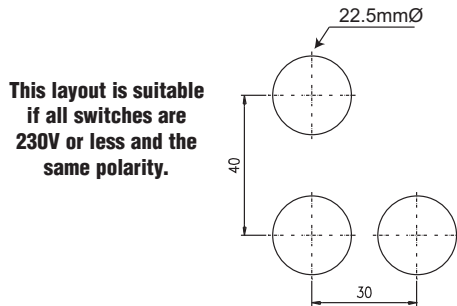
### Pushbuttons and selector switches

### Lighted pushbuttons and selector switches/pilot lights

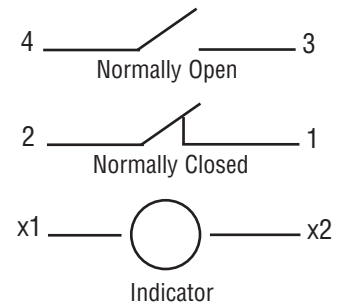


## Panel holes

For safe operation, use these mounting hole drawings to ensure that there is adequate space between switches.



## Typical Wiring



**NOTE:** Contact blocks can be arranged up to three deep by two wide.

## Specifications

These specifications apply to all the 22 mm plastic pushbuttons and switches.

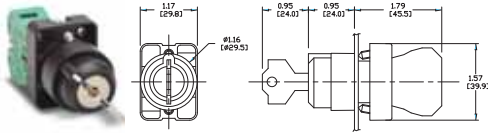
Physical Specifications	
<b>Standards Reference</b>	CEI EN 60947-5-1, CSA C22-2 n.14
<b>Approvals</b>	CSA, IMQ (where specified), UL File E189258
<b>Enclosure Material</b>	Fiberglass reinforced thermoplastic
<b>Contacts Material</b>	Gold plated silver
<b>Protection Degree</b>	IP 40 for GCX3151-24, GCX3151-120, GCX3153-24 and GCX3153-120. IP 65 for all others. (See Appendix of this catalog for explanation of IP ratings according to IEC 144 CEI 70-1.)
<b>Electric Shock Protection</b>	IEC 536, Class II
<b>Temperature Ratings</b>	Storage: -40° -to 80°C (-40° to 176° F) Operating: -25° to +70°C (-13° to 158° F)
<b>Working Positions</b>	All working positions are allowed
<b>Mechanical Life</b>	Pushbuttons, selector switches, joy stick switches: 1,000,000 operations Emergency mushrooms and push-push pushbuttons: 300,000 operations
<b>Positive Opening Operation</b>	(according to IEC 947-5-1) All functions incorporating an NC contact are positive opening operation

Electrical Specifications	
<b>Rated Thermal Current (contact block)</b>	A300, Q300 (Refer to page e25-51 for further information)
<b>Rated Insulation Voltage</b>	Ui 660V according to CEI EN 60947-5-1, 300V according to CSA C22-2 n.14 and UL 508
<b>Dielectric Strength</b>	3KV (1 second)
<b>Insulation Resistance</b>	2MΩ min. (500VDC)
<b>Initial Contact Resistance</b>	≤25mΩ
<b>Short-Circuit Protection*</b>	Cartridge fuses gl 10 A-500V 10, 3x381/ 100 KA
<b>Terminal Markings</b>	According to CENELEC EN 50013
<b>Connections</b>	Single screw with non-loosening plate clamp, 14AWG max., Tighten to 0.8Nm max
<b>Contacts Operation</b>	Self-cleaning types EN01 (N.C.) EN 10 (N.O.) slow action, positive opening
<b>Operation Frequency</b>	3600 operations per hour max.
<b>Utilization Category</b>	<b>AC15</b> (Control of AC electromagnetic loads) 24 volts AC at 10 amps 130 volts AC at 6.5 amps <b>DC13</b> (Control of DC electromagnetic loads) 24 volts DC at 1.5 amps 110 volts DC at 0.5 amps

\*Note: Recommended, not supplied

# 22 mm Indicator Lights and Plastic Key Switches

## Key-operated selector switches



### GCX3420 (2-position maintained)

- Keyed switches come with two keys

Part Number	Price	Description
GCX3420	<--->	22 mm plastic selector switch, key-operated, <b>two-position maintained</b> , key can be removed in all positions. <b>One N.O.</b> contact block. Replacement keys available
GCX3430	<--->	22 mm plastic selector switch, key-operated, <b>two-position spring-return from right</b> . <b>One N.O.</b> contact block. Replacement keys available
GCX3470-22	<--->	22 mm plastic selector switch, key-operated, <b>three-position maintained</b> , key can be removed in all positions. <b>Two N.O.</b> and <b>two N.C.</b> contact blocks. Replacement keys available



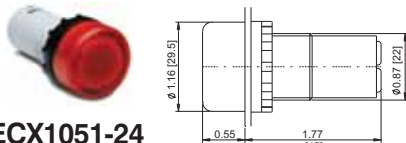
**Note:** Keyed switches come with two keys. All plastic 22 mm keyed switches are keyed the same. Replacement keys are available. Order part no. ECX1067-2 (pkg. of 2). Keys for plastic 22 mm keyed switches are not compatible with Cutler-Hammer key switches.



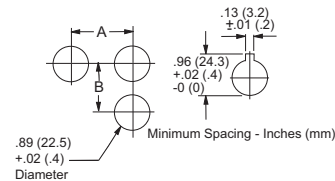
**Note:** When using switches having two-deep contact blocks (such as, Model GCX3470-22) with the 22 mm plastic enclosures, be sure to use enclosures that are 74 mm deep. 51 mm-deep enclosures are too shallow and the switch body will not fit.

**Note:** For contact closure sequence, refer to page 25-14.

## Plastic incandescent indicator lights



### ECX1051-24



These indicators have a key to prevent rotation when mounted.

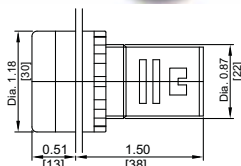
12 models available:

- 24V and 120V with incandescent lamp in six colors
- 24V and 120V lamps can be ordered separately
- Monoblock design for easy mounting
- Side wire entry with back screw terminals for easy wiring and maintenance
- IP20 rated before installation
- IP65 rated after installation

**Note:** When using LED replacement bulbs with these indicators, it may be necessary to remove the frosted diffuser for enhanced illumination.

Part Number	Lamp Color	Price	Description	Replacement Incandescent Bulb	Replacement LED
ECX1051-24	Red	<--->	22 mm monoblock incandescent indicator light, 24VDC/VAC	ECX1902-5 5/pk 80mA	ECX1911-2 2/pk 26mA
ECX1051-120	Red	<--->	22 mm monoblock incandescent indicator light, 120VDC/VAC	ECX1904-5 5/pk 20mA	ECX1921-2 2/pk 5mA
ECX1052-24	Green	<--->	22 mm monoblock incandescent indicator light, 24VDC/VAC	ECX1902-5 5/pk 80mA	ECX1912-2 2/pk 26mA
ECX1052-120	Green	<--->	22 mm monoblock incandescent indicator light, 120VDC/VAC	ECX1904-5 5/pk 20mA	ECX1922-2 2/pk 5mA
ECX1053-24	Yellow	<--->	22 mm monoblock incandescent indicator light, 24VDC/VAC	ECX1902-5 5/pk 80mA	ECX1913-2 2/pk 26mA
ECX1053-120	Yellow	<--->	22 mm monoblock incandescent indicator light, 120VDC/VAC	ECX1904-5 5/pk 20mA	ECX1923-2 2/pk 5mA
ECX1054-24	Blue	<--->	22 mm monoblock incandescent indicator light, 24VDC/VAC	ECX1902-5 5/pk 80mA	ECX1914-2 2/pk 26mA
ECX1054-120	Blue	<--->	22 mm monoblock incandescent indicator light, 120VDC/VAC	ECX1904-5 5/pk 20mA	ECX1924-2 2/pk 5mA
ECX1055-24	Clear	<--->	22 mm monoblock incandescent indicator light, 24VDC/VAC	ECX1902-5 5/pk 80mA	ECX1915-2 2/pk 26mA
ECX1055-120	Clear	<--->	22 mm monoblock incandescent indicator light, 120VDC/VAC	ECX1904-5 5/pk 20mA	ECX1925-2 2/pk 5mA
ECX1056-24	White	<--->	22 mm monoblock incandescent indicator light, 24VDC/VAC	ECX1902-5 5/pk 80mA	ECX1915-2 2/pk 26mA
ECX1056-120	White	<--->	22 mm monoblock incandescent indicator light, 120VDC/VAC	ECX1904-5 5/pk 20mA	ECX1925-2 2/pk 5mA

## Plastic LED indicator lights



10 models available:

- 24V and 120V with LED lamp in five colors
- Replacement bulbs are not available for these models.
- IP20 rated before installation
- IP65 rated after installation
- 12 mA @ 120V, 65 mA @ 24V

Part Number	Lamp Color	Price	Description
ECX2051-24L	Red	<--->	22 mm non-metal monoblock LED indicator light, 24VDC/VAC
ECX2051-127L	Red	<--->	22 mm non-metal monoblock LED indicator light, 120VDC/VAC
ECX2052-24L	Green	<--->	22 mm non-metal monoblock LED indicator light, 24VDC/VAC
ECX2052-127L	Green	<--->	22 mm non-metal monoblock LED indicator light, 120VDC/VAC
ECX2053-24L	Yellow	<--->	22 mm non-metal monoblock LED indicator light, 24VDC/VAC
ECX2053-127L	Yellow	<--->	22 mm non-metal monoblock LED indicator light, 120VDC/VAC
ECX2054-24L	Blue	<--->	22 mm non-metal monoblock LED indicator light, 24VDC/VAC
ECX2054-127L	Blue	<--->	22 mm non-metal monoblock LED indicator light, 120VDC/VAC
ECX2055-24L	Clear	<--->	22 mm non-metal monoblock LED indicator light, 24VDC/VAC
ECX2055-127L	Clear	<--->	22 mm non-metal monoblock LED indicator light, 120VDC/VAC

**Note:** All dimensions are in inches [millimeters].

# 22 mm Pilot Device Accessories

## Replacement incandescent bulbs



ECX1902-5

Part Number	Quantity	Price	Rating	Description
ECX1900-5	Pkg of 5 bulbs	<--->	6V@ 200mA, 1.2 watts	6V replacement bulb for 22 mm switches and indicators. Miniature bayonet base T31/4
ECX1902-5	Pkg of 5 bulbs	<--->	24V@ 80mA 2 watts	24V replacement bulb for 22 mm switches and indicators. Miniature bayonet base T31/4
ECX1904-5	Pkg of 5 bulbs	<--->	130V@20mA 2.6 watts	120V replacement bulb for 22 mm switches and indicators. Miniature bayonet base T31/4

*Note: Bulb removal tool available. Order part number HT8LAMPTOOL.*

## Replacement LED bulbs



ECX1915-2

Part Number	Color	Quantity	Price	Rating	Description
ECX1911-2	Red	Pkg of 2 LED lamps	<--->	24V@26mA 0.6 watts	LED replacement lamp for miniature bayonet bases
ECX1912-2	Green		<--->		
ECX1913-2	Yellow		<--->		
ECX1914-2	Blue		<--->		
ECX1915-2	White		<--->		
ECX1921-2	Red		<--->	120V@5mA 0.6 watts	Works with 22 mm metal and non-metal switches and indicators, but illumination will not be as even when used with 22 mm indicators  Note: <b>Will not replace</b> sealed C-H monoblock LED indicators.
ECX1922-2	Green		<--->		
ECX1923-2	Yellow		<--->		
ECX1924-2	Blue		<--->		
ECX1925-2	White		<--->		

*Note: LED modules have very low current draw and should not be used with triac output devices like PLC triac output modules. It is recommended that dry contact outputs be used to switch 120 volt AC LED modules.*

## Hole plug



ECX1490

Part Number	Color	Price	Description
ECX1490	Black	<--->	Plastic hole plug for 22.5 mm openings in panels and enclosures; supplied with O-ring and mounting screw. Two plugs per package.

## Protective covers for pushbuttons



ECX1703-5

Part Number	Color	Quantity	Price	Description
ECX1700-5	Black	Pkg of 5 protective caps	<--->	Silicone protective covers for use with 22 mm plastic standard-size flush pushbuttons. <b>Will not work</b> with C-H pushbuttons, 22 mm plastic illuminated or extended pushbuttons, or 22 mm plastic pushbuttons with 40 mm actuator face.
ECX1701-5	Red		<--->	
ECX1702-5	Green		<--->	
ECX1703-5	Yellow		<--->	
ECX1704-5	Blue		<--->	
ECX1705-5	Clear		<--->	
ECX1706-5	Clear	<--->	Clear silicone protective covers for use with 22 mm plastic illuminated and <b>extended pushbuttons only</b> . <b>Will not work</b> with C-H pushbuttons, 22 mm plastic pushbuttons with 40 mm actuator face, or 22 mm plastic lighted mushroom pushbuttons.	

## Knockout Punches



109225

Ruko's knockout punch hole-cutting tool includes punch, die and draw bolt (without ball bearing). Use for sheet steel, stainless-steel sheets, non-ferrous and light metals, and plastics up to 0.16" (8 ga.) thick. Replacement bolts are offered in three of the most popular sizes.

*Note: Part number 109225 is recommended when punching holes for 22mm pilot devices.*

## Replacement keys



ECX1067-2

Part Number	Quantity	Price	Description
ECX1067-2	Pkg of 2	<--->	Replacement keys for all key-actuated 22 mm plastic selector switches only. <b>Will not work</b> with Cutler-Hammer 22 mm keyed switches sold by AutomationDirect

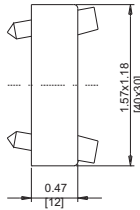
*Note: All key-actuated 22mm plastic selector switches are keyed alike.*

# 22 mm Pilot Device Accessories

## Replacement 22 mm support base



ECX3029-2

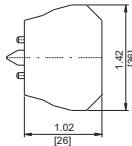


Part Number	Quantity	Price	Description
ECX3029-2	Pkg of 1	<--->	22 mm plastic support base Note: This item is supplied as a replacement part and is not required with any switch assembly. <b>Will not work</b> with Cutler-Hammer 22 mm switches sold by AUTOMATIONDIRECT

## Replacement contact blocks



ECX1030-2



Part Number	Quantity	Price	Contacts	Description
ECX1030-2	Pkg of 2	<--->	Red, normally-closed (N.C.)	Replacement contact block for 22 mm plastic push-buttons and selector switches.
ECX1030-5	Pkg of 5	<--->		Tightening Torque, terminal screw: 0.8Nm max mounting screw: 0.5Nm max
ECX1040-2	Pkg of 2	<--->	Green, normally-open (N.O.)	Note: <b>Will not work</b> with Cutler-Hammer 22 mm switches sold by AUTOMATIONDIRECT
ECX1040-5	Pkg of 5	<--->		
ECX1042-2	Pkg of 2	<--->	Brown, normally-open (N.O.), push-push	Use on lighted Push-push button only

Note: See electrical specifications on page 25-6.

## EMERGENCY STOP legend plate



ECX1651

Part Number	Quantity	Price	Description
ECX1651	pkg. of 1	<--->	Oversize yellow circular EMERGENCY STOP legend plate for 22 mm E-stop type mushroom pushbuttons, 60 mm outside diameter.

## Two-position short lever operator



GR1172PR-5

Short Lever Replacement Operator				
Part Number	Lamp Color	Price	2-Position	Use with
GR1172PR-5	Red	<--->	22 mm 2-position selector switch illuminated short lever replacement operator, 5/pk	Part numbers starting with GCX124, GCX125, GCX324, GCX325
GR1172PV-5	Green	<--->	22 mm 2-position selector switch illuminated short lever replacement operator, 5/pk	
GR1172PG-5	Yellow	<--->	22 mm 2-position selector switch illuminated short lever replacement operator, 5/pk	
GR1172PB-5	Blue	<--->	22 mm 2-position selector switch illuminated short lever replacement operator, 5/pk	
GR1172PN-5	Clear	<--->	22 mm 2-position selector switch illuminated short lever replacement operator, 5/pk	

# 22 mm Pilot Device Accessories

## Three-position short lever operator



GR1288PR-5

Short Lever Replacement Operator				
Part Number	Lamp Color	Price	3-Position	Use with
GR1288PR-5	Red	<--->	22 mm 3-position selector switch illuminated short lever replacement operator, 5/pk	Part numbers starting with GCX126, GCX128 GCX326, GVX328
GR1288PV-5	Green	<--->	22 mm 3-position selector switch illuminated short lever replacement operator, 5/pk	
GR1288PG-5	Yellow	<--->	22 mm 3-position selector switch illuminated short lever replacement operator, 5/pk	
GR1288PB-5	Blue	<--->	22 mm 3-position selector switch illuminated short lever replacement operator, 5/pk	
GR1288PN-5	Clear	<--->	22 mm 3-position selector switch illuminated short lever replacement operator, 5/pk	

## Mushroom switch replacement operator



PL1298P-5

Mushroom Switch Replacement Operator				
Part Number	Lamp Color	Price	Description	Use with
PL1171PR-5	Red	<--->	22 mm, illuminated <b>momentary</b> Mushroom switch replacement operator, red, 5/pk	Part numbers starting with GCX1221, GCX3221 mushroom-style illuminated pushbuttons
PL1298P-5	Red	<--->	22 mm illuminated <b>twist-to-release</b> mushroom switch replacement operator, red, 5/pk	Part numbers starting with GCX1226, GCX3226 mushroom-style illuminated pushbuttons

## Flush pushbutton replacement operator



GR1168PR-5

Flush Pushbutton Replacement Operator				
Part Number	Lamp Color	Price	Description	Use with
GR1168PR-5	Red	<--->	22 mm illuminated flush pushbutton replacement operator, 5/pk	Part numbers starting with GCX119, GCX120 GCX319, GCX320
GR1168PV-5	Green	<--->	22 mm illuminated flush pushbutton replacement operator, 5/pk	
GR1168PG-5	Yellow	<--->	22 mm illuminated flush pushbutton replacement operator, 5/pk	
GR1168PB-5	Blue	<--->	22 mm illuminated flush pushbutton replacement operator, 5/pk	
GR1168PN-5	Clear	<--->	22 mm illuminated flush pushbutton replacement operator, 5/pk	
GR1168PW-5	White	<--->	22 mm illuminated flush pushbutton replacement operator, 5/pk	

## Extended pushbutton replacement operator



PL1308PR-5

Extended Pushbutton Replacement Operator				
Part Number	Lamp Color	Price	Description	Use with
PL1308PR-5	Red	<--->	22 mm illuminated extended pushbutton, replacement operator, 5/pk	Part numbers starting with GCX121, GCX321
PL1308PV-5	Green	<--->	22 mm illuminated extended pushbutton, replacement operator, 5/pk	
PL1308PG-5	Yellow	<--->	22 mm illuminated extended pushbutton, replacement operator, 5/pk	
PL1308PB-5	Blue	<--->	22 mm illuminated extended pushbutton, replacement operator, 5/pk	
PL1308PN-5	Clear	<--->	22 mm illuminated extended pushbutton, replacement operator, 5/pk	
PL1308PW-5	White	<--->	22 mm illuminated extended pushbutton, replacement operator, 5/pk	