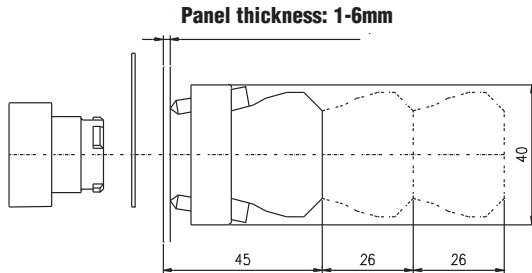


# 22 mm Metal Pilot Devices Specifications

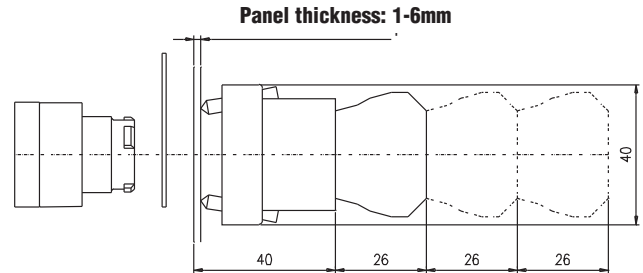
## Assembly information

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

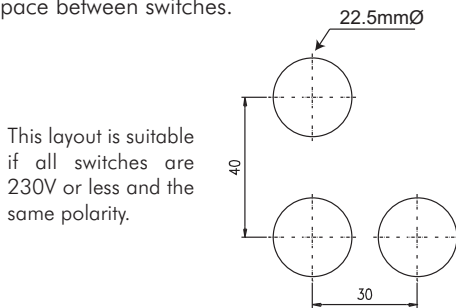


### Lighted pushbuttons and selector switches/pilot lights



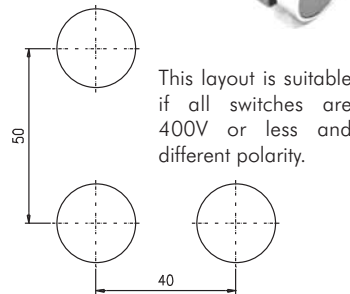
## Panel holes

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



This layout is suitable if all switches are 230V or less and the same polarity.

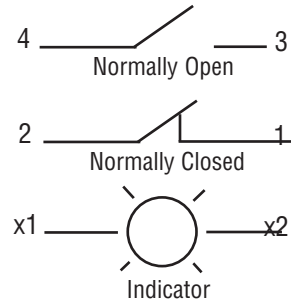
**NOTE:** Contact blocks can be arranged up to three deep by three wide.



This layout is suitable if all switches are 400V or less and different polarity.

All dimensions are in millimeters. 25.4mm = 1 inch. For example, 30 mm in inches = 30/25.4 = 1.181 inches.

## Typical Wiring



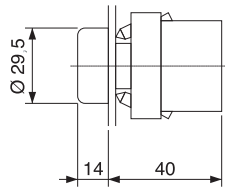
## Specifications

These specifications apply to all 22 mm metal pushbuttons and switches.

Physical Specifications		Electrical Specifications	
<b>Standards Reference</b>	CEI EN 60947-5-1, CSA C22-2 n.14	<b>Rated Thermal Current (contact block)</b>	A300, Q300 (Refer to page e25-51, for more information.)
<b>Approvals</b>	CSA, IMQ (where specified), UL File E189258	<b>Rated Insulation Voltage</b>	Ui 660V according to CEI EN 60947-5-1, 300V according to CSA C22-2 n.14
<b>Enclosure Material</b>	Zn + Al + Mg alloy, chromium plated	<b>Dielectric Strength</b>	3KV (1 second)
<b>Contacts Material</b>	Gold plated silver	<b>Insulation Resistance</b>	2MΩ min. (500VDC)
<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>Initial Contact Resistance</b>	≤25mΩ
<b>Temperature Ratings</b>	Storage: -40° to 80°C (-40° to 176° F) Operating: -25° to +70°C (-13° to 158° F)	<b>Short-Circuit Protection*</b>	Cartridge fuses gl 10 A-500V 10,3x381 100 KA
<b>Working Positions</b>	All working positions are allowed	<b>Terminal Markings</b>	According to CENELEC EN 50013
<b>Mechanical Life</b>	Pushbuttons, selector switches: Joy stick switches: 1,000,000 operations Mushroom pushbuttons: 300,000 operations	<b>Connections</b>	Single screw with non-loosening plate clamp, 14AWG 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 Metal Illuminated Pilot Light



## LED Illuminated Pilot Light

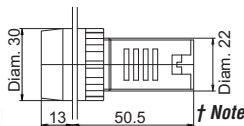
12 models available

- 24V and 120V with LED lamp in six colors
- Bulbs are included
- Replacement bulbs are available

Part Number	Lamp Color	Price	Description	Replacement Incandescent Bulb	Replacement LED Bulb
<b>LED</b>					
<b>GCX1231-24L</b>	Red	<--->	22 mm metal LED illuminated pilot light. 24VDC/VAC	ECX1902-5 5/pk, 80mA	ECX1911-2 2/pk, 26mA
<b>GCX1231-120L</b>	Red	<--->	22 mm metal LED illuminated pilot light. 120VDC/VAC	ECX1904-5 5/pk, 20mA	ECX1921-2 2/pk, 5mA
<b>GCX1232-24L</b>	Green	<--->	22 mm metal LED illuminated pilot light. 24VDC/VAC	ECX1902-5 5/pk, 80mA	ECX1912-2 2/pk, 26mA
<b>GCX1232-120L</b>	Green	<--->	22 mm metal LED illuminated pilot light. 120VDC/VAC	ECX1904-5 5/pk, 20mA	ECX1922-2 2/pk, 5mA
<b>GCX1233-24L</b>	Yellow	<--->	22 mm metal LED illuminated pilot light. 24VDC/VAC	ECX1902-5 5/pk, 80mA	ECX1913-2 2/pk, 26mA
<b>GCX1233-120L</b>	Yellow	<--->	22 mm metal LED illuminated pilot light. 120VDC/VAC	ECX1904-5 5/pk, 20mA	ECX1923-2 2/pk, 5mA
<b>GCX1234-24L</b>	Blue	<--->	22 mm metal LED illuminated pilot light. 24VDC/VAC	ECX1902-5 5/pk, 80mA	ECX1914-2 2/pk, 26mA
<b>GCX1234-120L</b>	Blue	<--->	22 mm metal LED illuminated pilot light. 120VDC/VAC	ECX1904-5 5/pk, 20mA	ECX1924-2 2/pk, 5mA
<b>GCX1235-24L</b>	Clear	<--->	22 mm metal LED illuminated pilot light. 24VDC/VAC	ECX1902-5 5/pk, 80mA	ECX1915-2 2/pk, 26mA
<b>GCX1235-120L</b>	Clear	<--->	22 mm metal LED illuminated pilot light. 120VDC/VAC	ECX1904-5 5/pk, 20mA	ECX1925-2 2/pk, 5mA
<b>GCX1236-24L</b>	White	<--->	22 mm metal LED illuminated pilot light. 24VDC/VAC	ECX1902-5 5/pk, 80mA	ECX1915-2 2/pk, 26mA
<b>GCX1236-120L</b>	White	<--->	22 mm metal LED illuminated pilot light. 120VDC/VAC	ECX1904-5 5/pk, 20mA	ECX1925-2 2/pk, 5mA

# 22mm Pilot Devices

## Audible annunciator



- 80 dB @ 10 cm
- IP20 before installation
- IP64 after installation
- 25 mA @ 24V

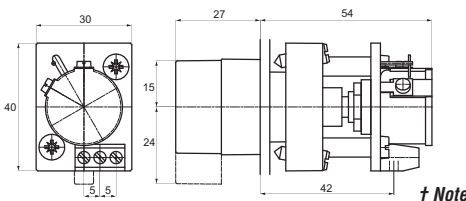
Part Number	Color	Price	Description
<b>ECX2070-24</b>	Black	<--->	22 mm, 25 mA audible (80dB at 10 cm) buzzer annunciator. 24VAC/DC
<b>ECX2070-127</b>	Black	<--->	22 mm, 25 mA audible (80dB at 10 cm) buzzer annunciator. 120VAC/DC
<b>ECX2071-24R</b>	Red	<--->	22 mm, 25 mA audible (80dB at 10 cm) buzzer annunciator with non-replaceable LED indicator. 24VAC/DC
<b>ECX2071-127R</b>	Red	<--->	22 mm, 25 mA audible (80dB at 10 cm) buzzer annunciator with non-replaceable LED indicator. 120VAC/DC

## 22 mm potentiometer



• IP65

Part Number	Quantity	Price	Description
<b>ECX2300-5K</b>	pkg. of 1	<--->	22 mm potentiometer with 5k $\Omega$ resistance, $\pm 10\%$ . Nominal voltage: 250V. Rated dissipation: 2W at 25°C. Temperature range -40°C to 70°C. Black handle
<b>ECX2300-10K</b>	pkg. of 1	<--->	22 mm potentiometer with 10k $\Omega$ resistance, $\pm 10\%$ . Nominal voltage: 250V. Rated dissipation: 2W at 25°C. Temperature range -40°C to 70°C. Black handle
<b>ECX2640</b>	pkg. of 1	<--->	22 mm legend plate for potentiometer with 0% to 100% marking, 50 mm square. 50 x 50 x 1mm with 24.5mm cutout.



† Note: All dimensions are in millimeters.  
25.4mm = 1 inch.  
For example,  
30 mm in inches = 30/25.4 = 1.181 inches.

Note: Find our extensive line of accessories on pages 25-42 to 25-44.

# 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 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.
ECX1912-2	Green		<--->		
ECX1913-2	Yellow		<--->		
ECX1914-2	Blue		<--->		
ECX1915-2	White		<--->		
ECX1921-2	Red		<--->	120V@5mA 0.6 watts	
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 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.

## Pilot Light replacement lens



PL1170PR-5

Pilot Light Replacement Lens				
Part Number	Lamp Color	Price	Description	Use with
PL1170PR-5	Red	<--->	22 mm metallic series pilot light replacement lens, 5/pk	Part numbers starting with GCX123
PL1170PV-5	Green	<--->	22 mm metallic series pilot light replacement lens, 5/pk	
PL1170PG-5	Yellow	<--->	22 mm metallic series pilot light replacement lens, 5/pk	
PL1170PB-5	Blue	<--->	22 mm metallic series pilot light replacement lens, 5/pk	
PL1170PN-5	Clear	<--->	22 mm metallic series pilot light replacement lens, 5/pk	
PL1170PW-5	White	<--->	22 mm metallic series pilot light replacement lens, 5/pk	

## Protective covers for pushbuttons

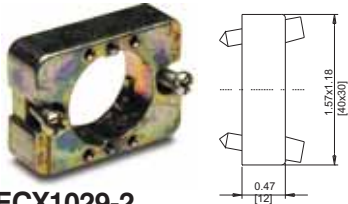


ECX1703-5

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 illumi- nated 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.

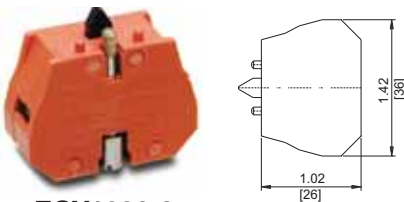
# 22 mm Pilot Device Accessories

## Replacement 22 mm support base


**ECX1029-2**

Part Number	Quantity	Price	Description
<b>ECX3029-2</b>	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
<b>ECX1030-2</b>	Pkg of 2	<--->	Red, normally-closed (N.C.)	Replacement contact block for 22 mm plastic push-buttons and selector switches. Tightening Torque, terminal screw: 0.8Nm max mounting screw: 0.5Nm max
<b>ECX1030-5</b>	Pkg of 5	<--->		
<b>ECX1040-2</b>	Pkg of 2	<--->	Green, normally-open (N.O.)	Note: <b>Will not work</b> with Cutler-Hammer 22 mm switches sold by AUTOMATIONDIRECT
<b>ECX1040-5</b>	Pkg of 5	<--->		
<b>ECX1042-2</b>	Pkg of 2	<--->	Brown, normally-open (N.O.), push-push	Use on lighted Push-push button only

Note: See electrical specifications on page e25-26.

## Replacement keys


**ECX1067-2**

Part Number	Quantity	Price	Description
<b>ECX1067-2</b>	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 metal selector switches are keyed alike.

## EMERGENCY STOP legend plate


**ECX1651**

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

## 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.

## Two-position short lever operator


**GR1172PR-5**

Note: All dimensions are in inches [millimeters].

Short Lever Replacement Operator				
Part Number	Lamp Color	Price	2-Position	Use with
<b>GR1172PR-5</b>	Red	<--->	22 mm 2-position selector switch illuminated short lever replacement operator, 5/pk	Part numbers starting with GCX124, GCX125 GCX324, GCX325
<b>GR1172PV-5</b>	Green	<--->	22 mm 2-position selector switch illuminated short lever replacement operator, 5/pk	
<b>GR1172PG-5</b>	Yellow	<--->	22 mm 2-position selector switch illuminated short lever replacement operator, 5/pk	
<b>GR1172PB-5</b>	Blue	<--->	22 mm 2-position selector switch illuminated short lever replacement operator, 5/pk	
<b>GR1172PN-5</b>	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/pknumber	Part numbers starting with GCX126, GCX128 GCX326, GCX328
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 <del>momentary</del> Mushroom switch replacement operator, red, 5/pk	Part numbers starting with GCX1221, GCX3221 mushroom-style illuminated pushbuttons
PL1298P-5	Red	<--->	22 mm illuminated <del>twist-to-release</del> 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



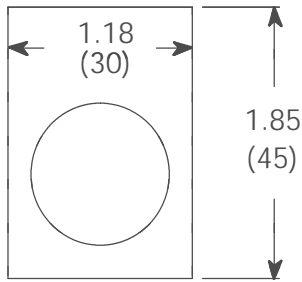
PL1308PR-5

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	

# E22 Legend Plates

## Legend plates

Aluminum legend plates feature a plastisol backing to help prevent rotation of the operator.



Approximate dimensions in inches (mm).

## E22VA8



Accessories			
Color	Part Number	Legend	Price
Black	<b>E22NS11</b>	"CLOSE"	<--->
Black	<b>E22NS12</b>	"DOWN"	<--->
Red	<b>E22NS13</b>	"EMERG. STOP"	<--->
Black	<b>E22NS15</b>	"FORWARD"	<--->
Black	<b>E22NS19</b>	"JOG"	<--->
Black	<b>E22NS25</b>	"ON"	<--->
Black	<b>E22NS26</b>	"OPEN"	<--->
Black	<b>E22NS30</b>	"REVERSE"	<--->
Black	<b>E22NS31</b>	"RUN"	<--->
Black	<b>E22NS33</b>	"START"	<--->
Red	<b>E22NS34</b>	"STOP"	<--->
Black	<b>E22NS35</b>	"UP"	<--->
Black	<b>E22NS36</b>	Blank plate	<--->
Red	<b>E22NS37</b>	Blank plate	<--->
Black	<b>E22NS38</b>	"FOR-REV"	<--->
Black	<b>E22NS39</b>	"HAND-AUTO"	<--->
Black	<b>E22NS41</b>	"JOG-RUN"	<--->
Black	<b>E22NS42</b>	"OFF-ON"	<--->
Black	<b>E22NS43</b>	"OPEN-CLOSE"	<--->
Black	<b>E22NS48</b>	"UP-DOWN"	<--->
Black	<b>E22NS50</b>	"FOR-OFF-REV"	<--->
Black	<b>E22NS51</b>	"HAND-OFF-AUTO"	<--->
Black	<b>E22NS80</b>	"POWER ON"	<--->
Black	<b>E22NS81</b>	"MOTOR RUN"	<--->
Black	<b>E22NS82</b>	"MOTOR STOP"	<--->
Black	<b>E22NL36</b>	Jumbo alum. blank plate (1.57 in wide x 1.85 in tall)	<--->
Red	<b>E22NL37</b>	Jumbo alum. blank plate (1.57 in wide x 1.85 in tall)	<--->
Red /black	<b>E22NSP77</b>	Plastic blank plate; red on one side, black on other side; either side can have letters engraved down into white plastic	<--->
Yellow	<b>E22VA8</b>	"EMERGENCY STOP" oversize yellow legend plate, 2.76" (70mm), printed	<--->

**NOTE:** Legend plates also work with the 22 mm metal switches. The removal of the locator tab on the legend plate is required for use with the 22 mm metal switches. This is easily accomplished with a round file or small grinder.