



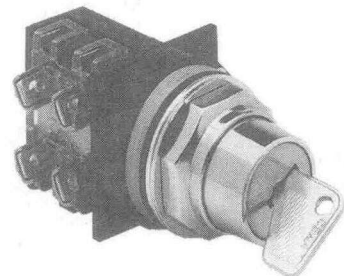
## GE Push Buttons

# CR104P Heavy-Duty, Nonilluminated Push Buttons

600 Volts Maximum AC/DC  
10 Amperes Continuous  
Suitable for use in NEMA Type 1,  
3, 3R, 4, 4X, 12, and 13 Applications<sup>①</sup>



Time-Delay Push Button



Cylinder Lock Push Button

### Time-Delay Push Buttons—Assembled (Adjustable 0.5-30 Seconds)

Button Color	Assembled Operator with 1NO-1NC Contacts	List Price, GO-10P1
	Catalog Number	
Black	CR104PBG99B1	\$106.20
Red	CR104PBG99R1	106.20
Green	CR104PBG99G1	106.20
Other <sup>②</sup>	CR104PBG99*1	106.20

#### \* Other Cap colors available:

Color Cap	Insert in Place of *
No Cap	A <sup>③</sup>
Yellow	E
Blue	L
Orange	M
Brown	N
White	W

<sup>③</sup> Subtract \$0.30 for no cap.

**Notes:** Catalog Number and price do not include nameplate. All nameplates must be ordered as a separate item from pages 9-33 and 9-34. Four single-circuit or four double-circuit contact blocks are maximum number that can be assembled to cylinder lock operators.

- ① When mounted in enclosures rated for those same applications. For some NEMA Type 4X applications, protective caps will provide improved corrosion resistance.
- ② Select required color cap from table at right.

### Cylinder Lock Push Buttons

Operator Alone (Select contact blocks from pg. 9-27, 9-28.)		Assembled Operator with 1NO-1NC Contacts	
Catalog Number	List Price, GO-10P1	Catalog Number	List Price, GO-10P1

#### Lock In Depressed and Free Positions

CR104PBK00A1J	\$52.20	CR104PBK91A1J	\$70.20
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#### Lock Only In Free Position

CR104PBK00A1K	52.20	CR104PBK91A1K	70.20
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#### Lock Only In Depressed Position

CR104PBK00A1L	52.20	CR104PBK91A1L	70.20
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#### Push-To-Latch, Key Operate To Reset

CR104PBK00A1M	52.20	CR104PBK91A1M	70.20
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Suitable for use in NEMA Types 1, 3, 3R, 4, 4X, 12, and 13 applications when mounted in enclosures rated for those same applications. For some NEMA Type 4X applications, protective caps will improve corrosion resistance.

#### Nameplates and Legend

Inserts	pages 9-33, 9-34
Technical Data	pages 9-3 to 9-5
Drilling Plan and Dimensions	page 9-4

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# Section 9

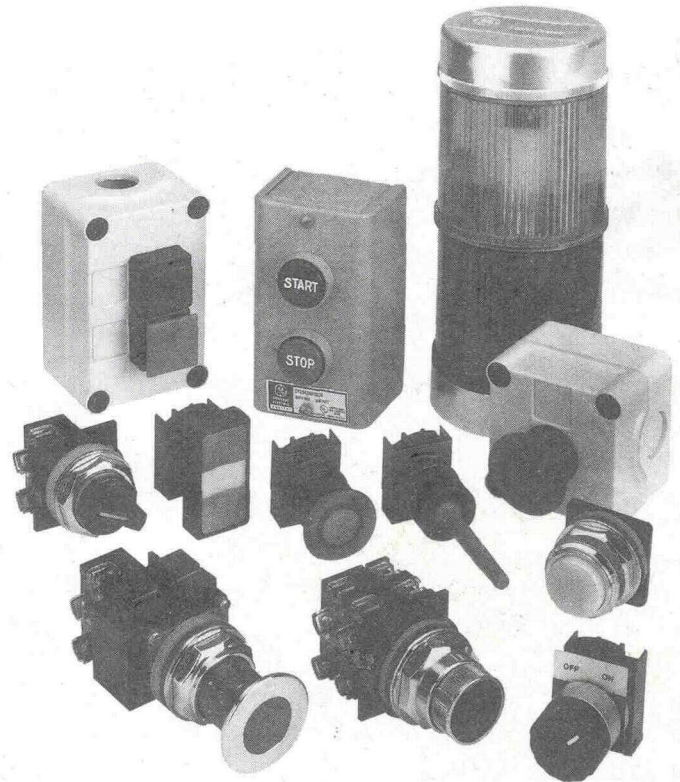
The GE push button offering includes a complete line of control units and stations in both full size push buttons (30 mm) and in miniature size devices (22 mm) which are designed to be used in numerous types of industrial applications.

The CR104P full-size, heavy-duty oiltight and watertight line is complete with a variety of accessories and enclosures.

Light Tower Status Indicating Lights provide information at a glance in industrial or commercial environments where you need to transmit and receive information across a distance. Modularity and versatility make them valuable in a broad range of applications.

GE's C-2000™ 22mm Global Push Buttons are designed to be applied in just about any application worldwide. C-2000 push buttons conform to all major world standards and are UL listed and CSA Certified. All devices except the double push button are rated for NEMA 1, 3, 3R, 3S, 4, 4X, 12, 13, and IP66 when mounted in a suitable enclosure. C-2000 push buttons are manufactured in an ISO 9000 facility, assuring you that these products comply with quality standards that are recognized worldwide. Pre-engraved nameplates are available in French, Spanish, Italian, German, and English. The C-2000 push button line is globally available under the same catalog numbers, packaging, and markings anywhere in the world.

An entire listing of CR2943 and CR2941 standard-duty push button control stations is available, suitable for NEMA Type 1, 4, 4X, and 7 and 9 applications.



Heavy-Duty 30mm Push Buttons, Selector Switches, Indicating Lights, Accessories (CR104P Series) .....	9-2 to 9-36
Light Tower Status Indicating Lights (SL Series) .....	9-37 to 9-47
C-2000™ 22mm Global Push Buttons (P9 Series) .....	9-48 to 9-100
Standard-Duty Push Button Control Stations (CR2943 and CR2941 Series) .....	9-101 to 9-103
Palm Switches .....	9-104

**References:**

See Publication Index, Section 18.

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# CR104P Heavy-Duty Push Buttons

600 Volts Maximum AC/DC  
10 Amperes Continuous

## Technical Data General Specifications

Standards & approvals	<b>UL listed</b> —File Number E2403 <b>CSA Certified</b> —LR15492, Class 321103 <b>NEMA</b> —ICS2—1988 <b>IEC</b> 947-5.1 <b>VDE</b> 0660		
Enclosure ratings	All units are suitable for use in <b>NEMA Type 1, 3, 3R, 4, 4X, 12, and 13</b> applications when mounted in enclosures rated for those same applications. For some NEMA 4X applications, protective caps will provide improved corrosion resistance.		
Finger protection at terminals	<b>IP2X</b> according to IEC 529 Terminal identification per <b>CENELEC EN 50013</b>		
Temperature range	<u>Operating</u> -25° to +70°C -13° to +158°F		<u>Storage</u> -40° to +70°C -40° to +158°F
Climate suitability/humidity	<u>Climate Type</u> Temperate Wet Hot Wet Variable Wet	<u>Temperature</u> 74°F (23°C) 74°F (23°C) 104°F (40°C) 74° to 104°F (23° to 40°C)	<u>Relative Humidity</u> 50% 83% 92% 83%-92%
Shock and vibration	<b>Resistance to shock</b> —50g, 11ms <b>Frequency range</b> —1-100 Hz <b>Vibration amplitude</b> —1-13.2 Hz—displacement ±1mm 13.2-100 Hz—acceleration ±0.7g		
Operating force		<u>Standard recessed push buttons</u>	<u>Standard flush push buttons</u>
	Without contact blocks With 1 NO contact block With 2 NO contact blocks With 3 NO contact blocks	1.625 lb./f. 2.5 lb./f. 3.5 lb./f. 4.0 lb./f.	2.5 lb./f. 2.875 lb./f. 3.5 lb./f. 4.375 lb./f.
Wire size	22-12 AWG stranded or solid copper wire		
Torque requirements	Terminal screws: 10-14 in./lb. Contact block mounting screws: 10-14 in./lb.		

## Contacts

Electrical reliability data	With indicating light loads, tested for 5,000,000 operations at 40mA and 115 V resistive loads with no failures observed.		
Electrical characteristics	<u>Characteristic</u>	<u>Value</u>	
	Thermal current	10A per IEC 947-5-1	
	Insulation voltage	U <sub>i</sub> = 660 Vac/dc	
	Protection from electrical shock	Class I per IEC 536 for metal operators; Class II (double insulation) per IEC 536 for plastic operators	
	Insulation category	Group C per VDE 0110	
	Dielectric strength	2500 V	
	Short-circuit protection	10A time-delay fuse gG per IEC 269.1 & 269.3	
Finger-safe terminals	Available for silver and gold single- and double-circuit contact blocks, as components and as assembled versions.		
Contact characteristics	NC: slow make, double break (positive opening) NO: slow make, double break Opposite polarity Self-cleaning below 300 volts NO and NC snap action (for use on joysticks)		
AC Ratings, NEMA A600 Heavy Pilot Duty	Maximum AC voltage	Continuous current amperes	AC Voltamperes @ 60/50 Hz Ⓞ
			Make      Break
	600	10	7200      720
Ⓞ Maximum make and break currents are 60 and 6 amperes respectively for voltages of 120 and below.			
DC Ratings, NEMA P600	Maximum make or break amperes		
	125 V	250 V	600 V
	1.1	0.55	0.2
Reed switch block ratings	AC ratings		DC ratings
	Operating voltage	2-120 Vac	2-30 Vdc
	Continuous current (maximum)	.001-.15A	.001-.15A
	Resistive, watts (VA)	8 VA maximum	4.5 VA maximum
Power supply resistor values	<u>Input</u> 120 Vac/dc 240 Vac/dc	<u>Resistor value</u> 750 ohms ±5%, 5 watts, 2 resistors in series 2700 ohms ±5%, 5 watts, 2 resistors in series	

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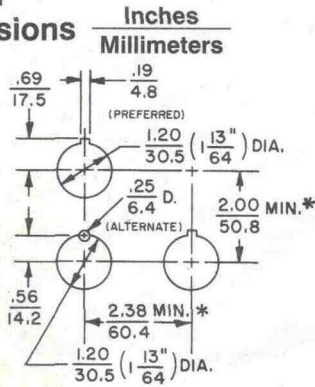
### Technical Data, Dimensions

#### Mounting

CR104P push buttons are designed for front mounting, with or without nameplates, in 1<sup>13</sup>/<sub>64</sub>" diameter holes. Operators are provided with an octagonal ring, spacers, and gaskets to ensure an oiltight, uniform front protrusion.

#### Drilling Plan

##### Dual Dimensions



Acceptable panel thickness 0.04 - 0.25 inches (1.02 - 6.35mm)

#### Mechanical Life Ratings

Operator	Number of Operations
Standard push buttons	3,000,000
Illuminated push buttons (including push-on/push-off)	1,000,000
Momentary mushroom-head push buttons	3,000,000
Maintained & push-to-latch, turn-to-release mushroom-head push buttons	500,000
Selector switches (all)	1,000,000
Joysticks	500,000
Toggle switches	500,000
Wobble sticks	1,000,000
Key-operated push buttons	500,000
Selector push buttons	1,000,000
Time-delay push buttons	1,000,000

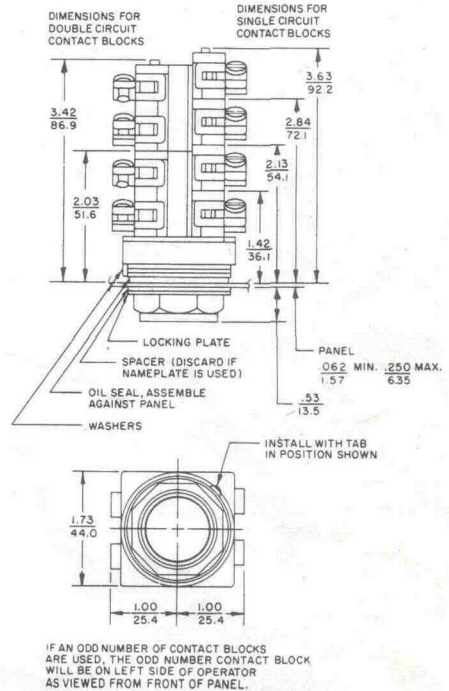
#### Electrical Life Ratings

Push buttons—5,000,000 operations
Selector switches—500,000 operations

#### Maximum Contacts

Operator	Single Circuit		Double Circuit	
	Blocks	Contacts	Blocks	Contacts
Nonilluminated selector switches (excluding 4-position)	6	6	6	12
Combination (push-turn)	6	6	6	12
Nonilluminated momentary push buttons (incl. mushroom-head)	8	8	4	8
Illuminated momentary push buttons	4	4	2	4
Push-to-latch/turn-to-release mushroom-head push buttons	4	4	4	8
Cylinder lock push buttons	4	4	4	8
Illuminated selector switches	4	4	2	4
3-position & 5-position joysticks	4	4	4	8
Push-pull illuminated mushroom-head push buttons	2	2	2	4
Push-pull nonilluminated mushroom-head push buttons	2	2	2	4
Nonilluminated 4-position selector switches	—	—	2	4
Push-pull illuminated push buttons	2	2	—	—

#### Dual Dimensions Inches Millimeters (For Estimating Only)



For dimensional information on other operators, contact nearest GE Industrial Systems—Electrical Distribution and Control Representative. Manufacturing tolerances apply to all untoleranced dimensions.

Panel thickness (inches)	No. of washers required
.062	3
.093	2
.125	2
.188	1
.25	0

#### Materials

Component	Material
Cap (nonilluminated)	Unfilled polyacetal
Cap (illuminated)	Polycarbonate
Metal housings	Chromium- or zinc-plated zinc ingot
Plastic housing	Nylon
White plunger	Unfilled polyacetal
Flange	Nylon
Grease	Good for temperatures of -42° to +204°C
Plate spacer	Polycarbonate
Locking plate	Chromium-plated zinc ingot
Locking ring	Chromium-plated zinc ingot
Hexagonal ring	Chromium-plated zinc ingot
Contact block housing	Nylon
Cam	Unfilled Polyacetal
Cam follower	Unfilled Polyacetal
Joystick protective housings	Vinyl nitrile
Terminal screw	#6-32
Gasket	Vinyl nitrile
Contacts	Silver alloy
Push button guards	Chromium-plated zinc ingot
Wobble stick	Aluminum
Key	Brass
Protective caps	Silicon rubber
Locking attachment	Polycarbonate

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