

CPI® Industrial Waterproof Switches



GENERAL SPECIFICATIONS

Electrical Rating (28VDC / 120VAC): 5 amps resistive, 3 amps inductive. Higher ratings available on special order. UL recognized for 120VAC/5 amp resistive rating. Refer to **Current/Endurance Chart** on page 14 of this catalog.

Operating temperature range: -50°F to 221°F, depending on configuration.

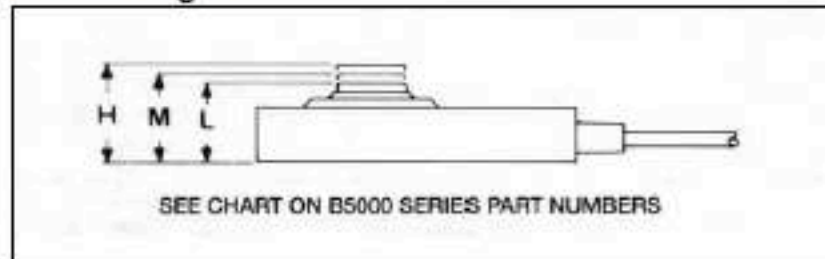
Switch mechanism: Beryllium copper sine spring.

Environmental resistance: Excellent resistance to both high and low temperatures, acids, alkalis, salt spray, sand, dust, and fungus.

Color: Black is standard. Other colors available on special order.

Jacket material: Thermoplastic rubber.

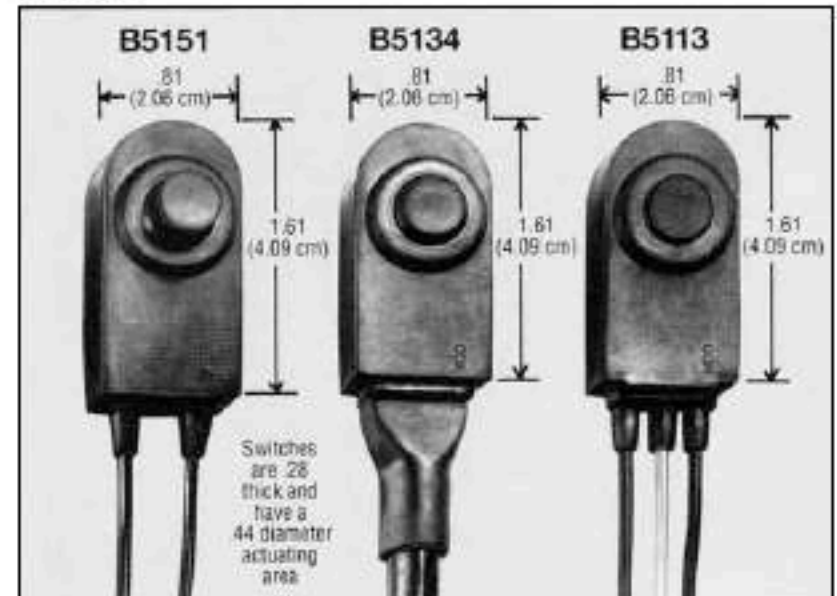
Button Heights:



Extended life option: To meet the needs of applications with high endurance requirements, CPI engineers have developed extended life contact configurations capable of more than five million mechanical cycles. This design provides virtually unlimited endurance in low-current applications. Extended life switches can be coupled with most CPI limit switch brackets, providing you with a broad array of limit switch solutions.

Special contacts: Silver is the standard contact material. CPI also offers several different options to meet the characteristics of dry circuits (low voltage), long (60 day) idle periods and harsh loads, such as in-rush current and inductive arc. Special alloys, contact spacing, and precise sine blade calibration all contribute to meeting these requirements. Please contact CPI for details.

Special terminations: Special cables, wires, coil cords, and connectors available. See **Special Terminations and Harnesses**.



B5000 SERIES PART NUMBERS

BUTTON HEIGHT			CONNECTION	ACTION	FIGURE (PAGE 6)
LOW (3/8")	MED. (7/16")	HIGH (1/2")			
B5111	B5131	B5151	2-Wire (1)	NO	1
B5112	B5132	B5152	2-Wire (1)	NC	1
B5113	B5133	B5153	3-Wire (1)	SPDT	2
B5114	B5134	B5154	Cable (2)	NO	3
B5115	B5135	B5155	Cable (2)	NC	3
B5116	B5136	B5156	Cable (2)	SPDT	3

REFERENCES:

- (1) 18 gauge, thermoplastic rubber insulation. Operating temperature: -50°F to 221°F
- (2) PVC insulation, 18 gauge wire, SJT. 300V, 60°C, 7 Amp. External strain relief may be required.

CPI® Industrial Waterproof Switches

B7000 Light Touch Switches: The B7000 series are special light touch switches that offer reduced operation force for applications requiring repetitive manual operation and increased sensitivity for limit switch applications. Normal switch actuation pressures range from 2.5 lbs. to 3.5 lbs. maximum. Light touch switches have a maximum actuation pressure of 1/8 lbs. depending on button height.

Actuating and Release Forces (lbs.)

Low Button - 0.4 Min. Release
1.1 Max. Actuate

Med Button - 0.5 Min. Release
1.3 Max. Actuate

High Button - 0.5 Min. Release
1.8 Max. Actuate

B7000 LIGHT TOUCH SERIES PART NUMBERS

BUTTON HEIGHT			CONNECTION	ACTION	FIGURE (PAGE 6)
LOW (3/8")	MED. (7/16")	HIGH (1/2")			
B7111	B7131	B7151	2-Wire (1)	NO	1
B7112	B7132	B7152	2-Wire (1)	NC	1
B7113	B7133	B7153	3-Wire (1)	SPDT	2
B7114	B7134	B7154	Cable (2)	NO	3
B7115	B7135	B7155	Cable (2)	NC	3
B7116	B7136	B7156	Cable (2)	SPDT	3

REFERENCES:

- (1) 18 gauge, thermoplastic rubber insulation. Operating temperature: -50°F to 221°F
- (2) PVC insulation, 18 gauge wire, S.J.T. 300V, 60°C, 7 Amp. External strain relief may be required.

MAINTAINED CONTACT SWITCHES



K5000 Series Switches:

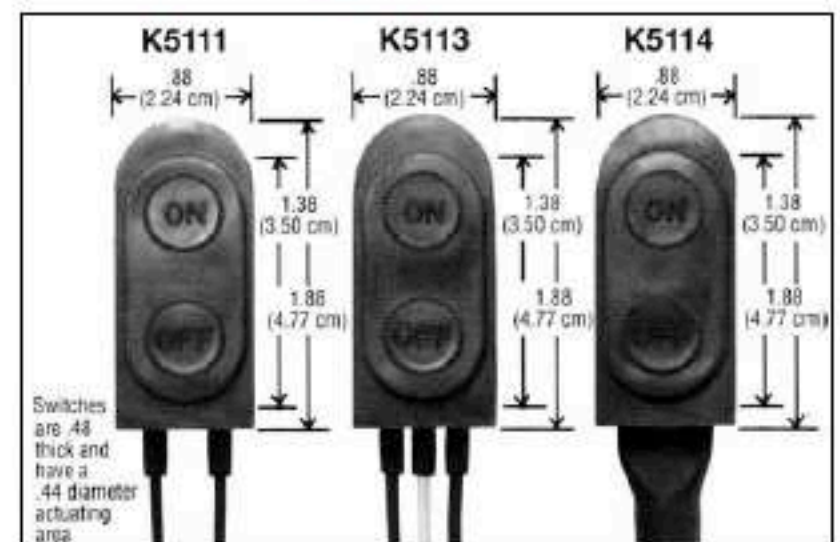
Industrial grade waterproof switches are now available in two position maintained circuits, SPST and SPDT. The oval actuator platform allows for installation behind panels and provides a panel seal. Two-position momentary circuits are also available for panel uniformity where side-by-side maintained and momentary control are needed.

General specifications, including contact ratings, are the same as the B5000/B7000 Series.

BUTTON LEGENDS:

Standard legend is "ON" - "OFF". Custom legends available, up to 3 characters per button.

SWITCH BODY DIMENSIONS:



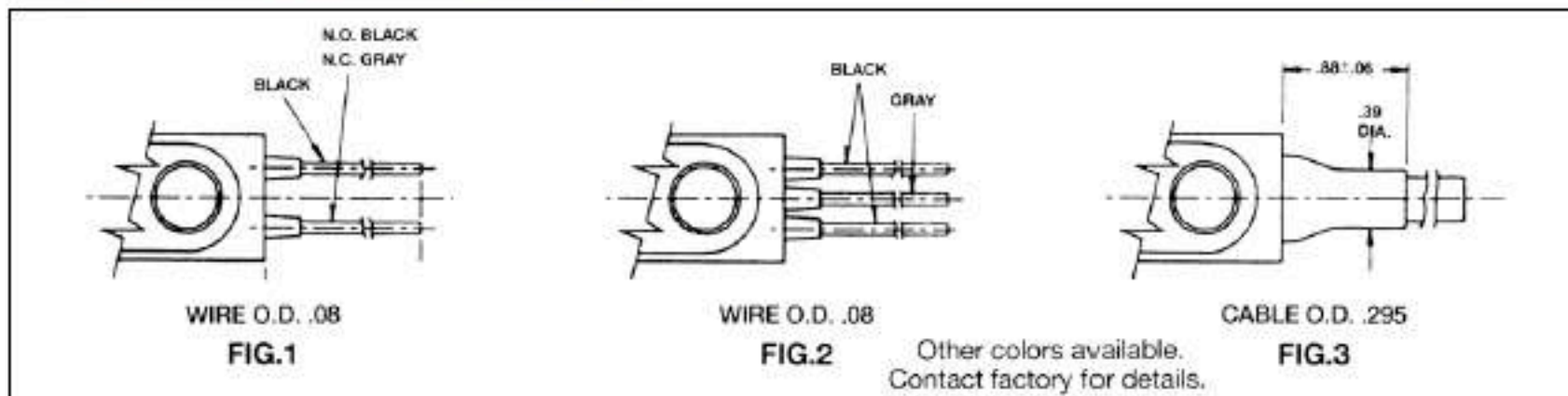
CPI® Industrial Waterproof Switches

K5000 SERIES PART NUMBERS

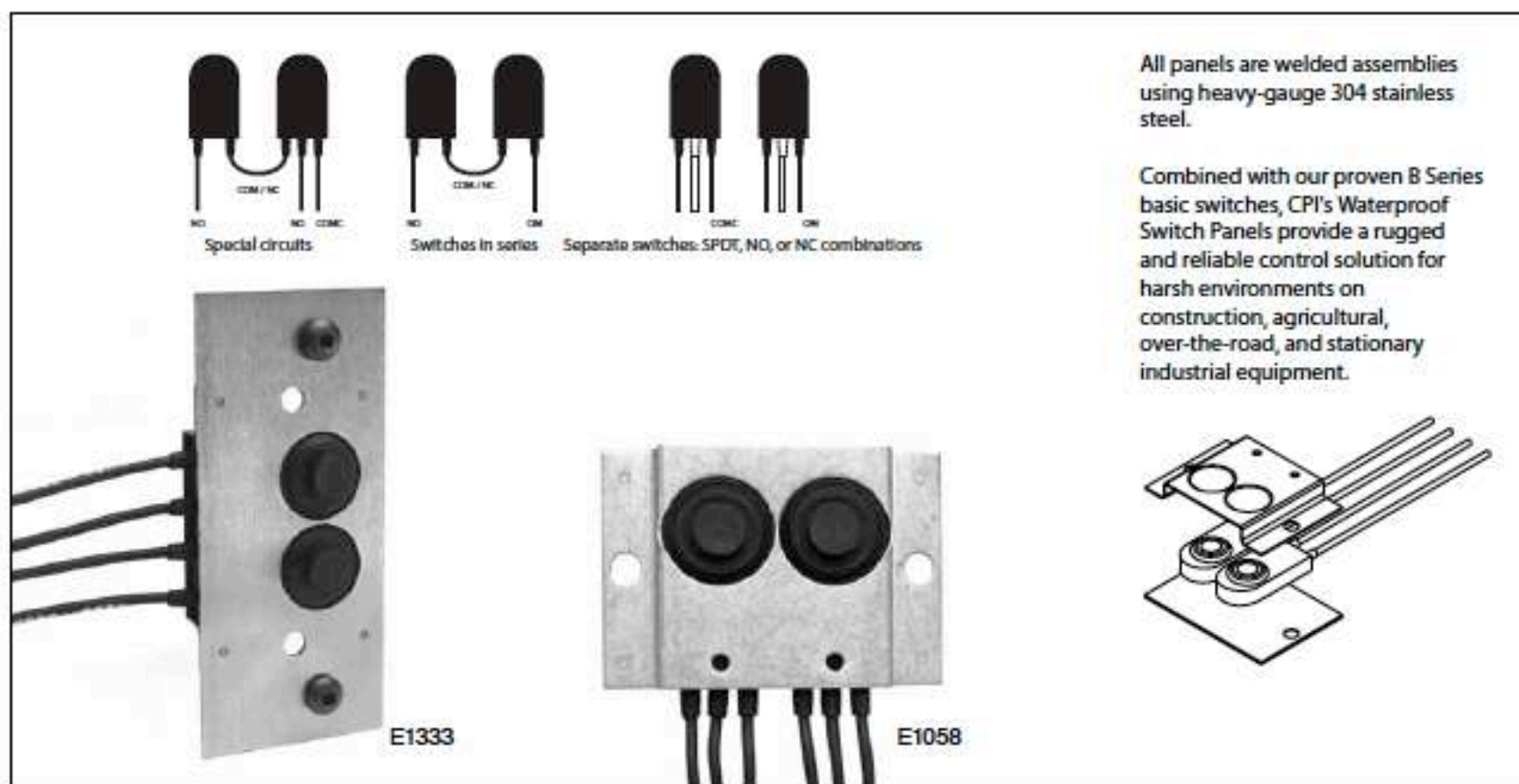
PART NUMBERS	CONNECTION	ACTION	FIGURE
K5111	2-Wire (1)	ON/OFF	1
K5113	2-Wire (1)	SPDT	1
K5114	Cable (2)	ON/OFF	3
K5116	Cable (2)	SPDT	3

REFERENCES:

- (1) 18 gauge, thermoplastic rubber insulation. Operating temperature: -50°F to 221°F
- (2) PVC insulation, 18 gauge wire, SJT. 300V, 60°C, 7 Amp. External strain relief may be required.



PANEL MOUNTING:



NOTES:

1. Waterproof switch will seal the panel when mounted as shown.
2. Panels thicker than 3/32" will cause the actuating button to be recessed below the mounting surface.
3. Two switches are shown mounted in E1333 and E1058 brackets, but any number can be mounted in various patterns. Please contact us for more panel bracket designs / configurations

ORDERING INFORMATION:

The complete ordering information for a CPI industrial waterproof switch is illustrated below. The first series of characters indicates the switch and the last number indicates the lead length in inches. The example here designates switch B5111 (low button, 2 wire, NO) with 12" leads. Dashes are used to separate the different components of the part number.

SWITCH B5111 LEAD LENGTH -12 TERMINATIONS

Wire terminations are standard. See Special Terminations and Harnesses, page 19

CPI® Military Grade Waterproof Switches



GENERAL SPECIFICATIONS:

Electrical rating:

- 28 VDC: 15 Amps resistive, 7.5 Amps inductive and 7.5 Amps lamp. 50,000 cycles
- 120 VAC: 5 Amps resistive, 2 Amps inductive and 2 Amps lamp. 100,000 cycles.

Other ratings available on special order.

Refer to **Current/Endurance Chart** on page 14

Switches are UL recognized for 120VAC / 5A electrical rating.

Operating temperature ranges: -65°F to 165°F

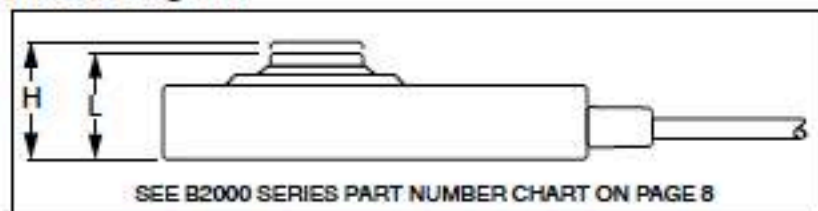
Switch mechanism: Beryllium copper sine spring.

Environmental resistance: Excellent resistance to both high and low temperatures, acids, alkalis, salt spray, sand, dust, and fungus.

Color: Black is standard. Other colors available on special order.

Jacket material: Neoprene is standard. Buna N available for special chemical resistance requirements such as aviation fuel.

Button heights:



Light Touch Switches: The B2000 Series are available as special light touch switches that offer less operator fatigue in applications requiring repetitive manual operation and increased sensitivity for limit switch applications. Normal switch actuation pressures range from 2.5 lbs. to 3.5 lbs. maximum. Light touch switches have a maximum actuation pressure of 1.8 lbs. depending on button height. Contact CPI for details.

Actuating and Release Forces (lbs.)

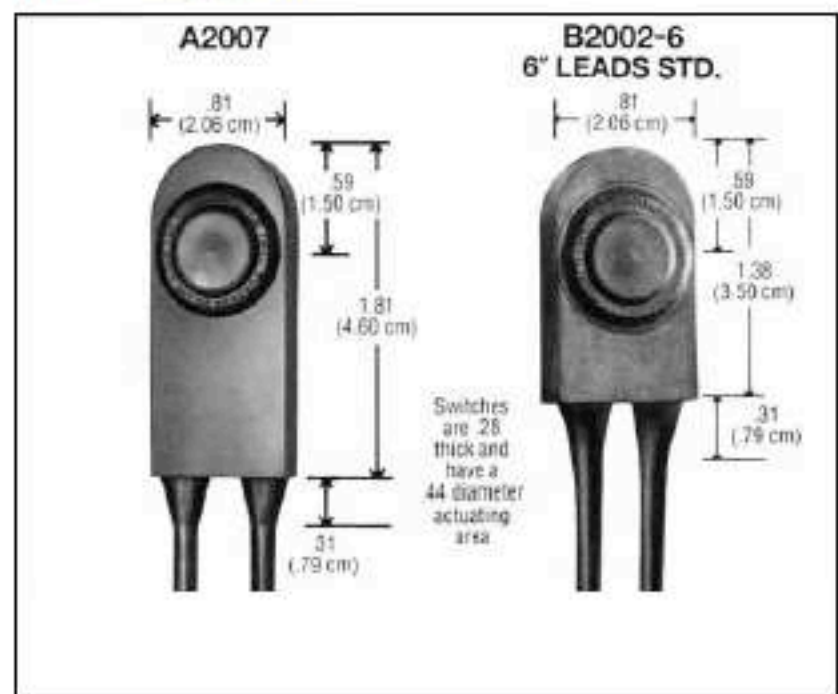
- Low Button - 0.4 Min. Release
1.1 Max. Actuate
- High Button - 0.5 Min. Release
1.8 Max. Actuate

Underwater operations: Standard CPI Waterproof Switches will be operated by the pressure of approximately 15 ft. of water.

Extended life option: To meet the needs of applications with high endurance requirements, CPI engineers have developed extended-life contact configurations capable of more than five million mechanical cycles. This design provides virtually unlimited endurance in low current applications. Extended life switches can be coupled with most CPI limit switch brackets, providing you with a broad array of limit switch solutions.

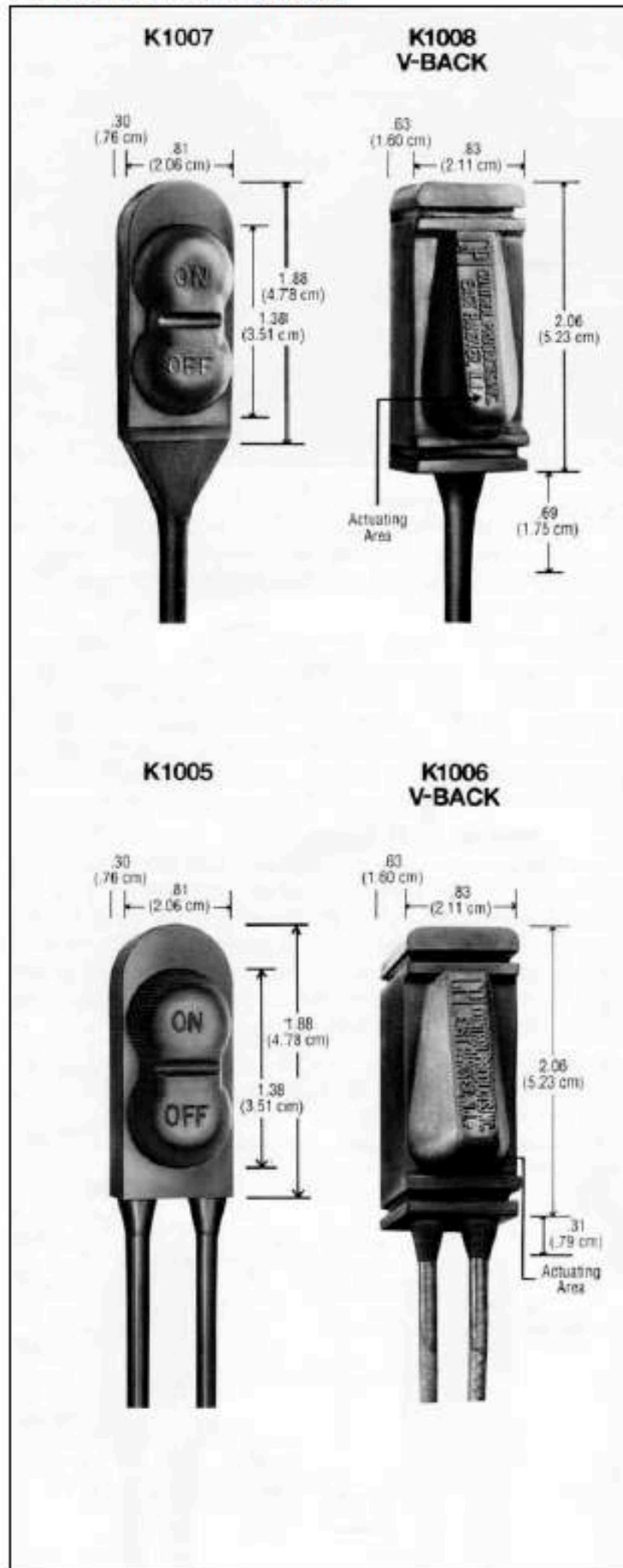
Special contacts: Silver is the standard contact material. CPI also offers several different options to meet the characteristics of dry circuits (low voltage), long (60 day) idle periods and harsh loads, such as in-rush current and inductive arc. Special alloys, contact spacing, and precise sine blade calibration all contribute to meeting these requirements. Please contact CPI for details.

Special terminations: Special cables, wires, coil cords, and connectors available. See **Special Termination and Harnesses**, page 19.

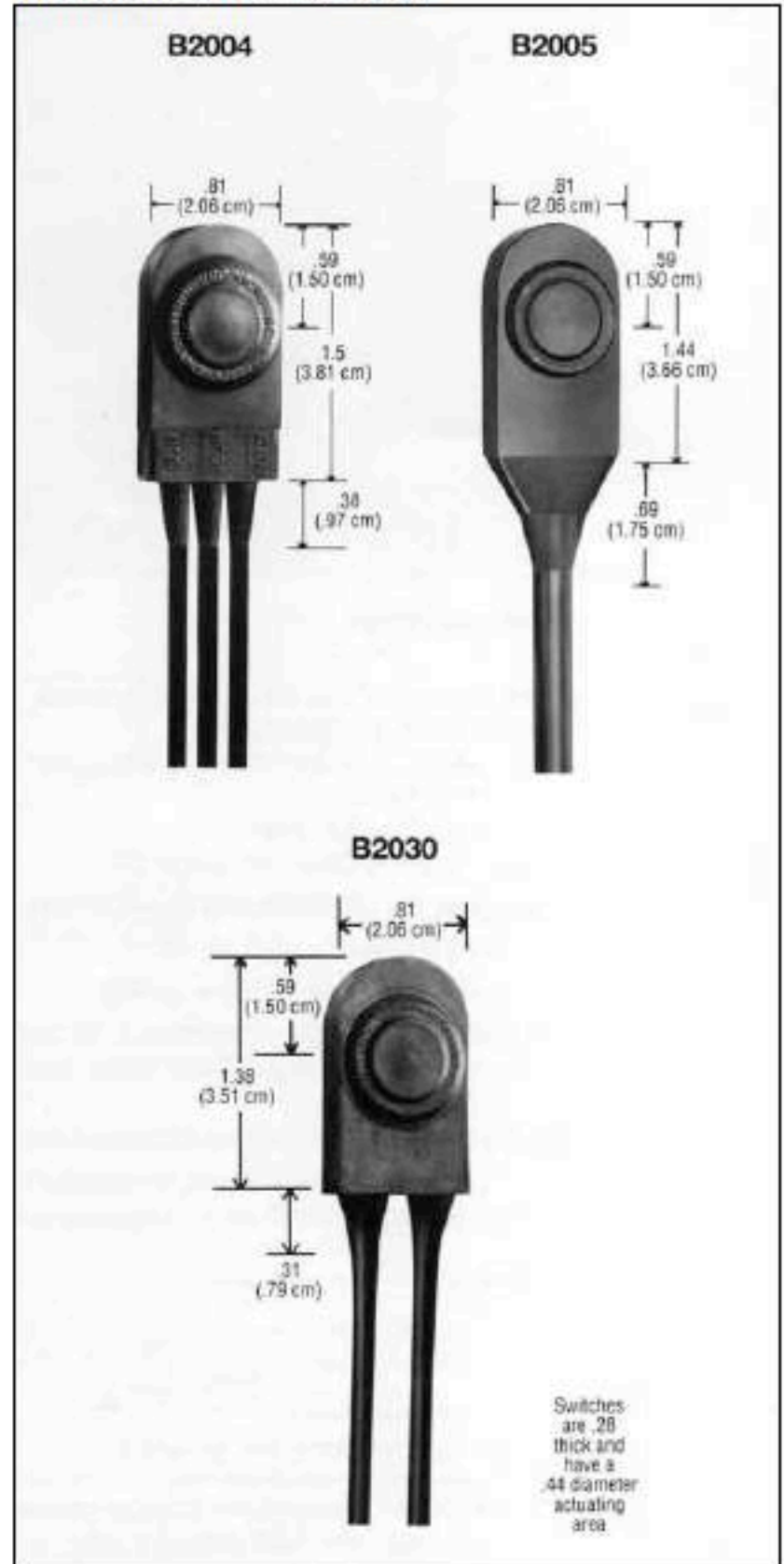


CPI® Military Grade Waterproof Switches

SWITCH BODY DIMENSIONS



SWITCH BODY DIMENSIONS



MILITARY SPECIFICATIONS

CPI PART NUMBER	ORDNANCE NUMBER	ACTION	LEAD LENGTHS
A2007-6	7389132 - (A2001)	N.O.	6-1/4
A2007-31	MS-39058-1 - (A2004)	N.O.	31
A2008-12	MS-39058-2 - (A2005)	N.C.	12-3/16
A2009-12	MS-39058-3 - (A2006)	S.P.D.T.	12-3/16

CPI® Military Grade Waterproof Switches

REQUIREMENT	CPI MEETS OR EXCEEDS MIL. SPEC.
Construction	MS 39058
Material: Rubber Jacket Wire	MS 39058, MIL-R-3065 MS 39058, Ord. #7722204
Corrosion Resistance	MIL-Std. 202 Method 101 A 200 hrs., Salt Spray
Fungus Resistance	MIL-F-13927 90 Days
Water Proofness	MIL-S-13484 B 6 psi internal pressure, 30 min. 6 psi internal vacuum, 30 min. Immersed in Salt Water Solution
Extreme Temp. Res.	MIL-S-13484 B 24 hrs. at -65° ±5°F 24 hrs. at 165° ±5°F Operated 1000 cycles 28 VDC 15A load
Shock Resistance	202A MIL-STD 202A 100 gravity units "g's" 28 VDC 15A (resistive) load during test
Vibration Resistance	201A MIL-STD 202A 1 hr. of vibration 3 major axes repeated in open position (not less than 6 hrs. in vibration) .06 inch double amplitude frequency 10 and 55 Hz return to 10 Hz 28 VDC 15A resistive load during test
Lead Connections	Subjected to a tensile force of 25 pounds along axis of lead and perpendicular to axis of leads

REQUIREMENT	CPI MEETS OR EXCEEDS MIL. SPEC.
Mechanical Actuation	Actuating Force — 1 to 2 pounds Release Force — 8 oz. minimum Release Time — 1/4 sec. maximum at -65°F Pretravel — .015" minimum Overtravel — .015" minimum Differential — .005" maximum
Contact Voltage Drop	MIL-S-13484 B 28 VDC 15A (resistive) load Voltage drop shall not exceed 150 millivolts
Overload	MIL-S-13484 B 28 VDC 22.5A (resistive) 100 "make" and "break" cycles
High Voltage	MIL-S-13484 B 440 Volts (RMS) at 60 Hz 1 min. between leads
Open Circuit Resistance	MIL-S-13484 B Open contacts not less than 1 megohm
Endurance	MIL-S-13484 B 28 VDC 7.5A (inductive) load 7.5A (lamp) load 25,000 "make" and "break" cycles
	115VAC 60 Hz 1/3 HP motor load 5A lamp 10A resistive 25,000 "make" and "break" cycles
	115VAC 60 Hz 4A inductive L/R = .049 8A resistive 100,000 "make" and "break" cycles

B2000 SERIES PART NUMBERS

BUTTON HEIGHT		CONNECTION	ACTION
LOW (3/8")	HIGH (1/2")		
B2002	B2030	2-Wire (1)	NO
B2003	B2031	2-Wire (1)	NC
B2004	B2032	3-Wire (1)	SPDT
B2005	B2046	Cable (2)	NO
B2006	B2047	Cable (2)	NC
B2007	B2048	Cable (3)	SPDT

REFERENCES

- (1) 16 gauge neoprene insulation (0.130" OD)
- (2) 18 gauge neoprene insulation (0.235" OD)
- (3) 20 gauge neoprene insulation (0.255" OD)

K1000 SERIES PART NUMBERS

PART NUMBERS	STANDARD LEAD LENGTH	CONNECTION	ACTION
K1005	18"	2-Wire (1)	On / Off
K1007	18"	Cable (2)	On / Off
K1006	18"	2-Wire (1)	NO / Lever
K1008	18"	Cable (2)	NO / Lever
K1009	18"	2-Wire (1)	NC / Lever
K1032	18"	Cable (2)	NC / Lever

REFERENCES

- (1) 16 gauge neoprene insulation (0.130" OD)
- (2) 18 gauge neoprene insulation (0.235" OD)

ORDERING INFORMATION:

The complete ordering information for a CPI military grade is illustrated below. The first series of characters indicates the switch and the last number indicates the lead length in inches. The example here designates switch B2002 (low button, 2-wire, NO), with 12" leads. Dashes are used to separate the different components of the part number.

