

12000 series

Professional toggle switches •
threaded bushing Ø 11.9 mm



DISTINCTIVE FEATURES

- CECC approved - conforms to MIL specifications
- Robust switches for high specification environments
- Toggle action on 2-position models for a smooth mechanical operation
- Several front panel sealing options
- Several locking lever options



ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load:
 - silver contacts (A-AD2-X780): 4 A 30 VDC
 - gold contacts (D): 100 mA 30 VDC
- Minimum load: AD2-X780-D contacts: 10 mA 50 mV, 10 µA 5 V min.
- Peak currents: refer to "Special options".
- Initial contact resistance: 10 mΩ max.
- Insulation resistance: 1,000 MΩ min. at 500 VDC
- Dielectric strength:
 - 1,000 Vrms 50 Hz min. between terminals
 - 2,000 Vrms 50 Hz min. between poles and between terminals and frame
- Contact bounce: 2 ms max.
- Electrical life at full load:

Contacts	Max. current/voltage rating	Number of cycles	
		2 positions	3 positions
A	4 A 30 VDC	50,000	50,000
AD2 X780	4 A 30 VDC (Gold plating: 100 mA 30 VDC max.)	20,000	20,000
D	100 mA 30 VDC	80,000	50,000
	Low level or mechanical life	150,000	100,000



GENERAL SPECIFICATIONS

- Torque: 1.50 Nm (1.10 Ft.lb) max. applied between the 2 nuts
- Standard panel thickness: 4.5 mm (.177) max.
- Operating temperature: -40 °C to +85 °C (-40 °F to +185 °F)

The company reserves the right to change specifications without notice.



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MATERIALS

- Case: diallyphthalate (DAP)
- Actuator: brass, chrome plated
- Bushing: brass, nickel plated
- Housing: brass, nickel plated
- Contacts
 - A: silver
 - AD2: gold plated silver (2 microns gold)
 - X780: solid rivet - gold plated - silver/nickel alloy
 - D: solid gold rivet
 - X910: silver/nickel alloy (for peak currents, see "Special options")
- Terminal seal: epoxy

Note: AD2 and X780 contacts can be used for high level applications. In this case, the gold layer is considered only as a protection against oxidation during storage.

AGENCY APPROVALS



CECC 96201-005
CECC 96201-008

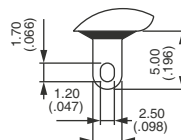
Designed to MIL specifications

Availability: consult factory for details of approved models.

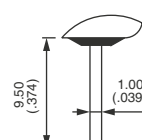
Marking: to order switches marked CECC, complete appropriate box of ordering format.



TERMINALS



Solder lugs

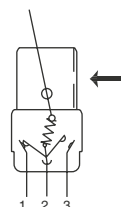


Straight PC

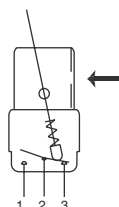


ELECTRICAL FUNCTIONS

→ KEYWAY



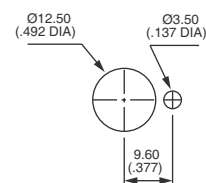
Function 6



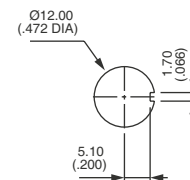
Other functions



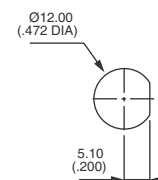
PANEL CUT-OUT



Standard



With K sealing option



With X408 sealing option



BASIC PART NUMBER

Function 4
▲ Must not have blank in "momentary" box.

FINISH

FLUORESCENT TIP

SPECIAL OPTIONS

CONTACT MATERIALS

See "Special options" for X780 (solid silver/nickel rivet) and X910 (for peak currents).

SEALING

Blank	Epoxy sealed terminals standard
K	Front panel sealing by one O-ring and sealing washer

Sealing by two O-rings, see X408, "Special options" box.

LEVERS

Blank	Standard lever
-12	Short lever
	⋮
LOCKING LEVERS	
-1V	1 locked position
-2V	2 locked positions
-3V	3 locked positions

Other: see following pages.

APPROVALS

CECC Availability:
Consult factory
for details of
approved models.



On the following pages, you will find successively basic part numbers of switches and options in the same order as in above chart

- 3

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SOLDER LUG TERMINALS - DOUBLE POLE



BASIC P/N	Angle of throw (A)	I	II	III
12146	26°	ON	-	ON
12149	20°	ON	OFF	ON
12147	20°	MOM	OFF	MOM
12148	20°	ON	OFF	MOM
12144*	20°	ON	ON	ON
12144 1R*	20°	ON	ON	MOM
12144 2R*	20°	MOM	ON	MOM
12145	12°	-	ON	MOM

*Function 4: SP in DP case - connections, see "Technical information" on website

TERMINALS - THREE POLE



BASIC P/N	Angle of throw (A)	I	II	III
12156	26°	ON	-	ON
12159	20°	ON	OFF	ON
12157	20°	MOM	OFF	MOM
12158	20°	ON	OFF	MOM

SOLDER LUG TERMINALS - FOUR POLE



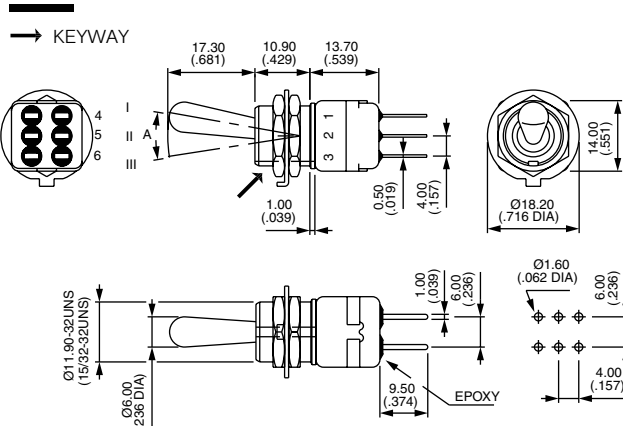
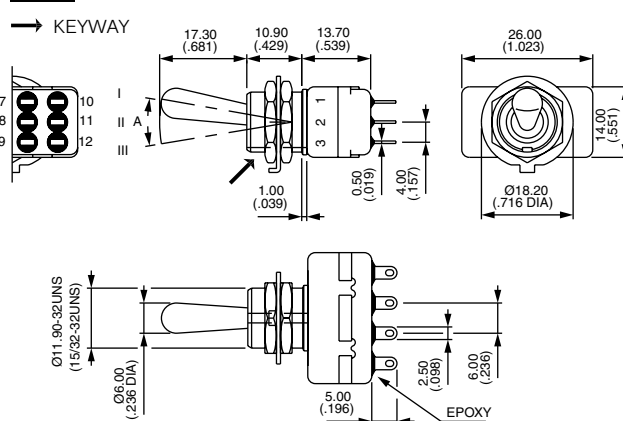
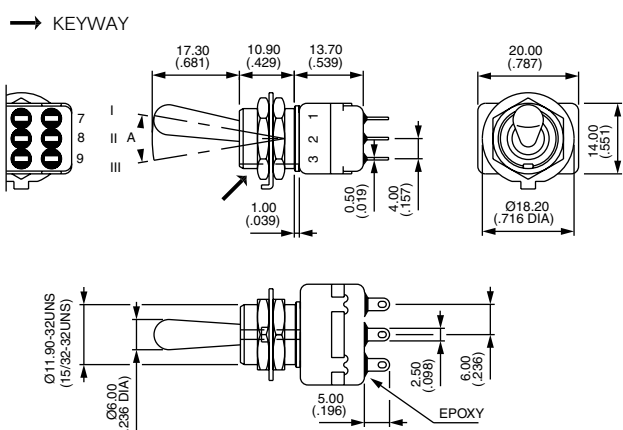
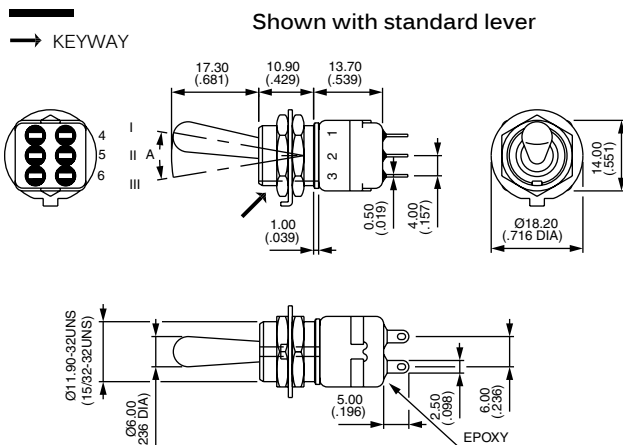
BASIC P/N	Angle of throw (A)	I	II	III
12166	26°	ON	-	ON
12169	20°	ON	OFF	ON
12167	20°	MOM	OFF	MOM
12168	20°	ON	OFF	MOM
12164*	20°	ON	ON	ON
12164 1R*	20°	ON	ON	MOM
12164 2R*	20°	MOM	ON	MOM

*Function 4: DP in 4P case - connections, see "Technical information" on website

STRAIGHT PC TERMINALS - DOUBLE POLE ▲



BASIC P/N	Angle of throw (A)	I	II	III
12246	26°	ON	-	ON



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STRAIGHT PC TERMINALS - THREE POLE ▲



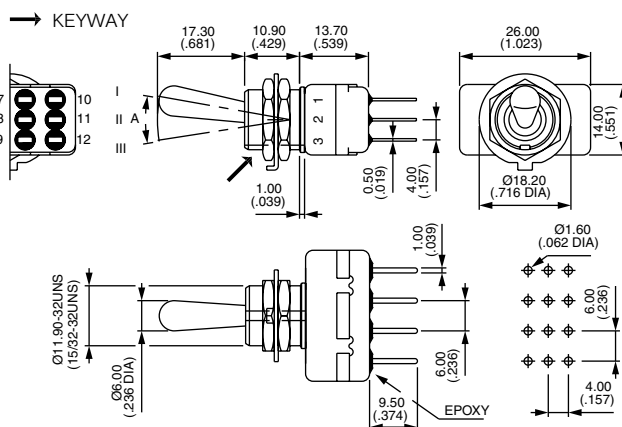
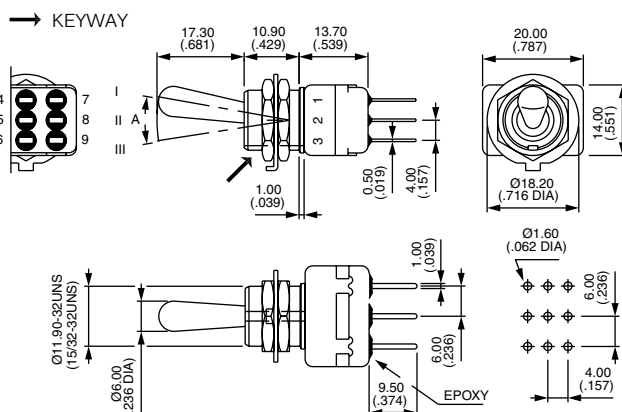
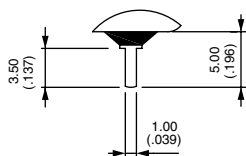
BASIC P/N	Angle of throw (A)	I	II	III
12256	26°	ON	-	ON

STRAIGHT PC TERMINALS - FOUR POLE ▲



BASIC P/N	Angle of throw (A)	I	II	III
12266	26°	ON	-	ON

▲ 3.5 mm (.138) short terminals available on request for function 6.
Standard for functions 9, 7, 8, 4 and 5.



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CONTACT MATERIALS

BASIC P/N

- A Silver
- AD2 Silver, gold plated (2 micron gold)
- D Solid gold rivet (except functions 4 and 5)

See "Special options" for contacts X780 (solid silver/nickel rivet) and contacts X910 (for peak currents).

FINISH

BASIC P/N

- Blank Bright chrome finish on actuator
- G Black finish on bushing, lever and hardware

For satin chrome finish, see "Special options".

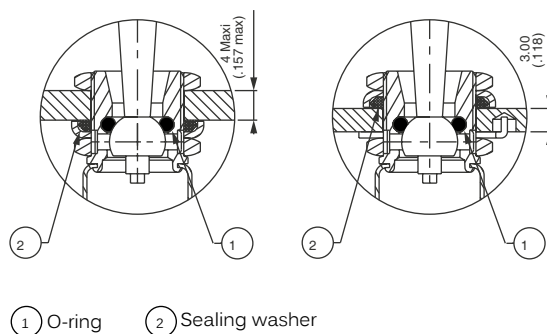
SEALING

BASIC P/N

Epoxy sealed terminals are standard.

- Blank No sealing except standard
- K Front panel sealing by one O-ring and sealing washer. Protects the switch against water and dust. Panel seal withstands 1 bar pressure and remains sealed even when switch is operated.

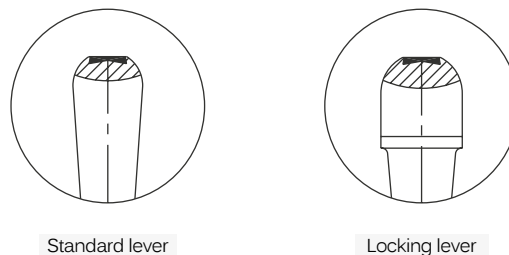
Sealing by two O-rings, see X408 under "Special options".
See "Sealing Boots" section of website.



FLUORESCENT TIP

BASIC P/N

- Blank None
- 038 White fluorescent tip. Becomes luminous when submitted to ultra-violet rays.
- ⓘ Available with black finish (option G) only



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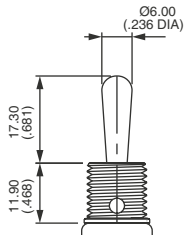
ACTUATORS

BASIC P/N

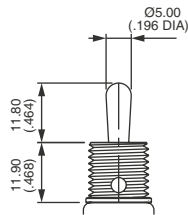
Dash compulsory before lever code.

Switch guards : see "Switch Guards" section of website.

LEVERS

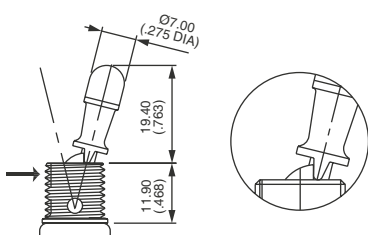


Blank Standard



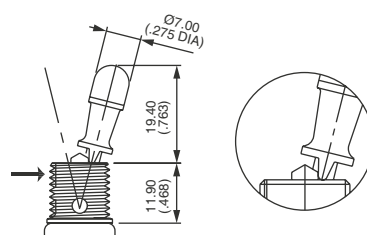
-12 Short lever

LOCKING LEVERS



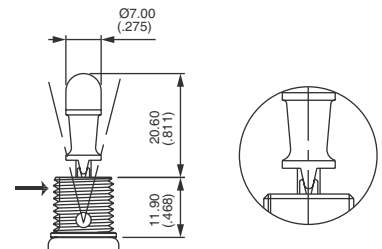
-1V

1 locked position (function 6)
Typical angle of throw : 26°



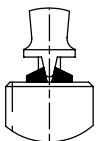
-2V

2 locked positions (function 6)
Typical angle of throw : 26°



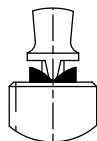
-3V

3 locked positions (functions 9 and 4)
Typical angle of throw : 20°



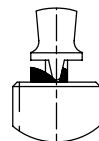
-4V

Functions 9 & 4



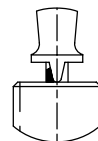
-5V

Functions 7 & 442R



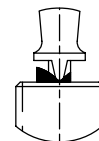
-7V

Functions 8 & 441R



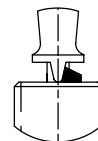
-8V

Functions 8, 9,
44 & 441R



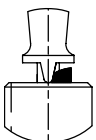
-9V

Functions 8 & 441R



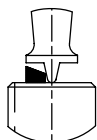
-11V

Functions 8, 9,
44 & 441R



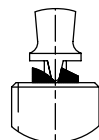
-12V

Functions 8 & 441R



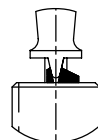
-13V

Funct. 8, 5 & 441R



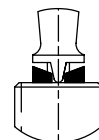
-15V

Functions 8 & 441R



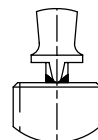
-16V

Functions 4 & 9



-17V

Functions 7 & 442R



-20V

Functions 9 & 44

Note: -5V and -12V are not true locking levers: no pulling is required before actuation.

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SPECIAL OPTIONS



Blank No special requirement

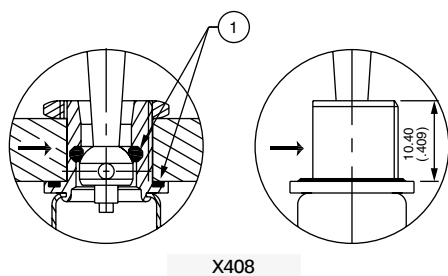
X408 Front panel sealing by two O-rings. Flatted bushing for precise orientation. Panel thickness: 8 mm (.314) max., 3 mm (.118) min. Protects the switch against water and dust. Panel seal withstands 1 bar pressure and remains sealed even when switch is operated.

X545 Lever, bushing, housing, nuts and washers with **satin chrome finish**

X822 Threaded bushing Ø 15 (.590), with double flat Not available with function 5 or locking levers. Includes front panel sealing and X780 contact material

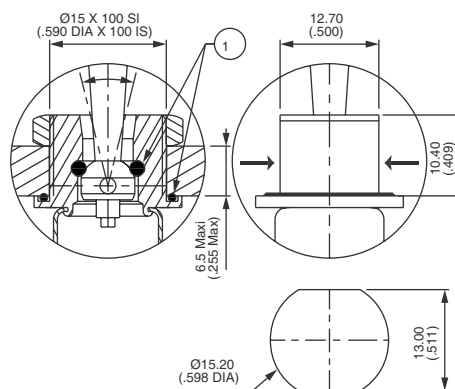
X780 Solid rivet - gold plated silver/nickel alloy contacts. Not available with function 5.

X910 Switches for peak currents - double pole - on request.



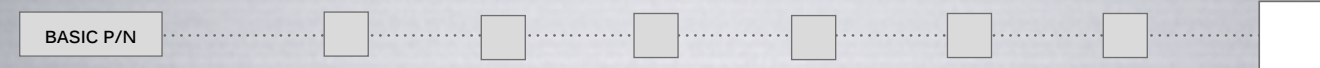
X408

1 O-ring
→ Flat



X822

AGENCY APPROVAL



CECC CECC 96201-005 (high level - contacts X780) - CECC 96201-008 (low level - contacts AD2 or D)

Blank No agency approval required.

Availability: consult factory for details of approved models.

Marking: to order switches marked CECC, complete above box with "CECC".