

# 11000 and 12000 series

Professional toggle switches

*Distinctive features*



## ☐ Applications

These switches are specially manufactured for defence, telecommunications and other professional applications.

## ☐ Approvals



CECC 96201-005  
CECC 96201-008

- Meeting the requirements of **MIL** standard (MIL 3950)



## ☐ Robust switches for high specification environments

## ☐ Toggle action on 2-position models giving smooth mechanical operation

## ☐ Plastic material with high insulation resistance

## ☐ Several front panel sealing options

## ☐ Several locking lever options (12000 series)

## ☐ Bright chrome, satin chrome or black finish



# 11000 series

## Professional toggle switches - threaded bushing Ø 6,35 (1/4)

### Specifications

#### ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
    - silver contacts (A-AD2-X780) : 4A 30VDC
    - gold contacts (D) : 100mA 30VDC
  - Minimum load : AD2-X780-D contacts : 10mA 50mV, 10µA 5V min.
  - Initial contact resistance : 10 mΩ max.
  - Insulation resistance : 1.000 MΩ min. at 500VDC
  - 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 :
- Peak currents, refer to "Special options".

| Contacts                     | Max. current/voltage rating                   | Number of cycles |             |
|------------------------------|-----------------------------------------------|------------------|-------------|
|                              |                                               | 2 positions      | 3 positions |
| A                            | 4A 30VDC                                      | 50.000           | 50.000      |
| AD2<br>X780                  | 4A 30VDC<br>(Gold plating : 100mA 30VDC max.) | 20.000           | 20.000      |
| D                            | 100mA 30VDC                                   | 80.000           | 50.000      |
| Low level or mechanical life |                                               | 150.000          | 100.000     |

#### MATERIALS

- Case : diallylphthalate (DAP)
- Actuator : brass, nickel 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.

#### GENERAL SPECIFICATIONS

- Torque : 1,25 Nm (.92 Ft.lb) max. applied between the 2 nuts
- Standard panel thickness : 2,5 mm (.098) max.
- Operating temperature : -40°C to +85°C

#### RELIABILITY - RUN-IN TEST

Upon request, each individual switch can be submitted to a low level run-in test of 50 or 250 cycles to ensure suitability for special applications requiring a very high level of reliability (military, etc.).

#### AGENCY APPROVALS



CECC 96201-005  
CECC 96201-008

**Availability** : consult factory for details of approved models.

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

**Dimensions** : first dimensions are in mm while inches are shown as bracketed numbers.

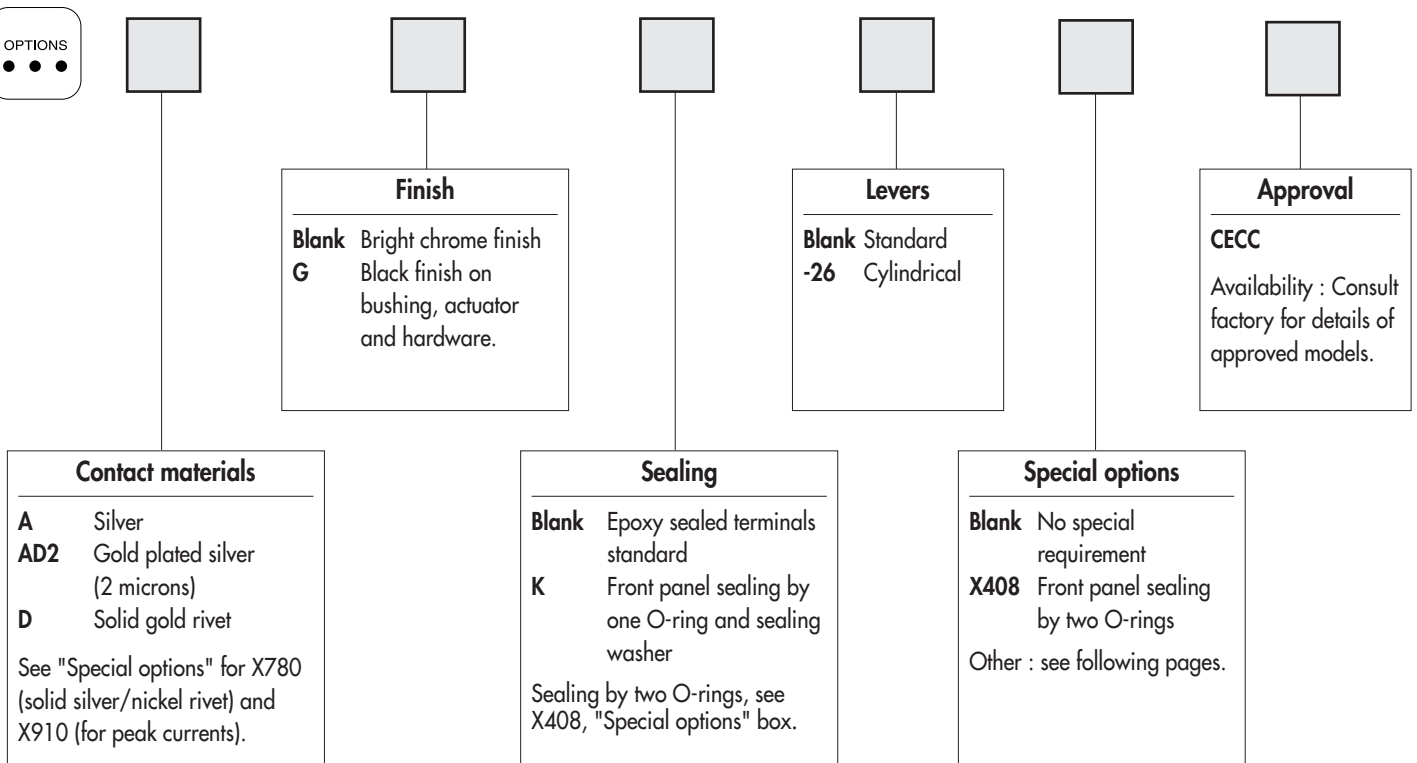
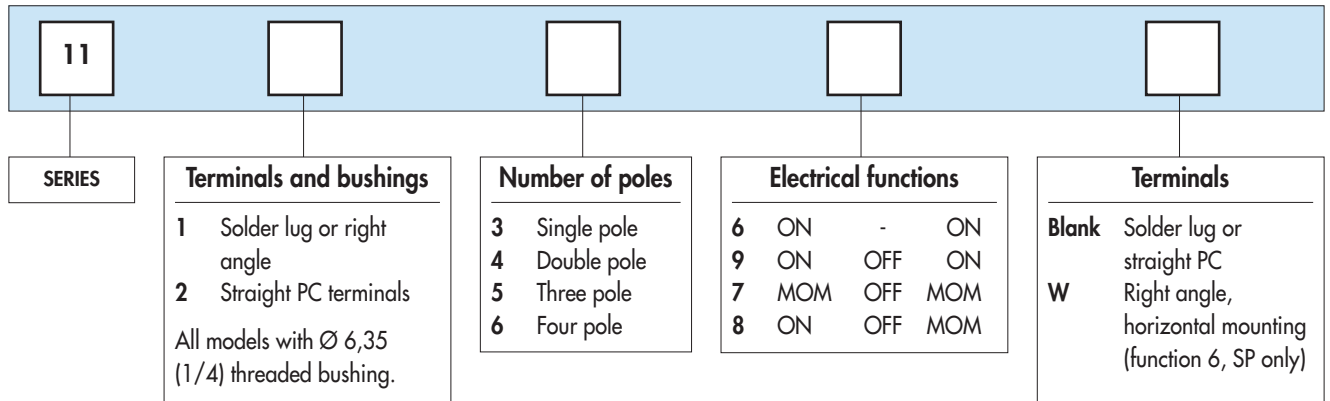


**Packaging unit** : 25 pieces or 50 pieces depending on models.

# 11000 series

Professional toggle switches - threaded bushing Ø 6,35 (1/4)

Overview



**NOTICE** : please note that not all combinations of above numbers are available. Refer to the following pages for further information.

## ABOUT THIS SERIES

On the following pages, you will find successively :

- model structure of switches
- options in the same order as in above chart



**Sealing boots** are available to protect the switches against dust and water. They are presented in section H.



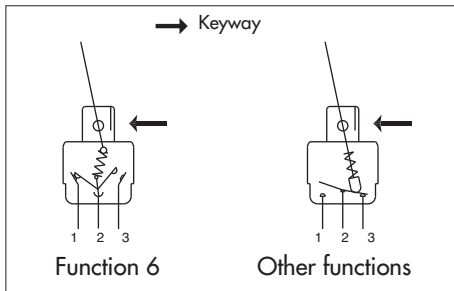
**Mounting accessories** : standard hardware supplied with all models : 2 hex nuts 8 (.314) across flats, 1 locking ring and 1 lockwasher. Standard and special hardware available are presented in section I.

# 11000 series

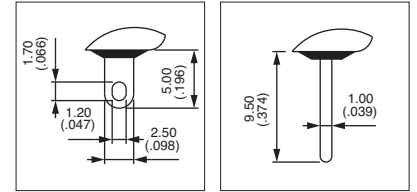
Professional toggle switches - threaded bushing Ø 6,35 (1/4)

MODEL  
STRUCTURE

A



- Solder lug, straight PC or right angle terminals
- Epoxy sealed terminals standard



MODEL  
STRUCTURE



Shown with standard lever

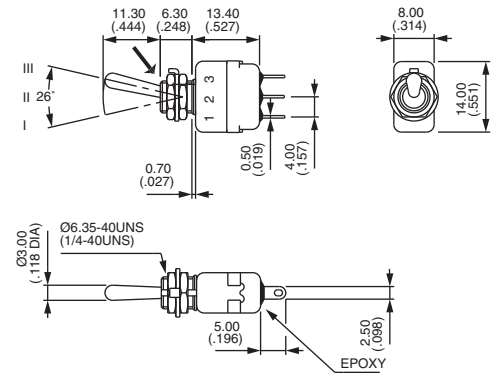
## Solder lug terminals - single pole



11136  
11139  
11137  
11138

|     | I   | II  | III |
|-----|-----|-----|-----|
| ON  | -   | ON  |     |
| ON  | OFF | ON  |     |
| MOM | OFF | MOM |     |
| ON  | OFF | MOM |     |

→ Keyway



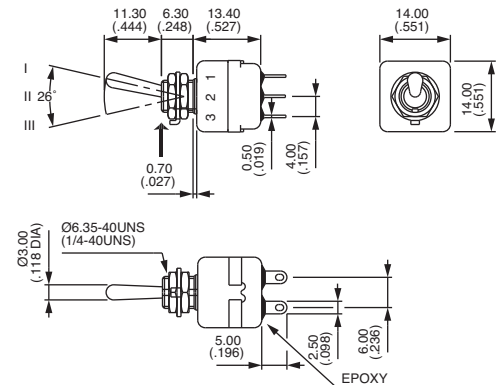
## Solder lug terminals - double pole



11146  
11149  
11147  
11148

|     | I   | II  | III |
|-----|-----|-----|-----|
| ON  | -   | ON  |     |
| ON  | OFF | ON  |     |
| MOM | OFF | MOM |     |
| ON  | OFF | MOM |     |

→ Keyway



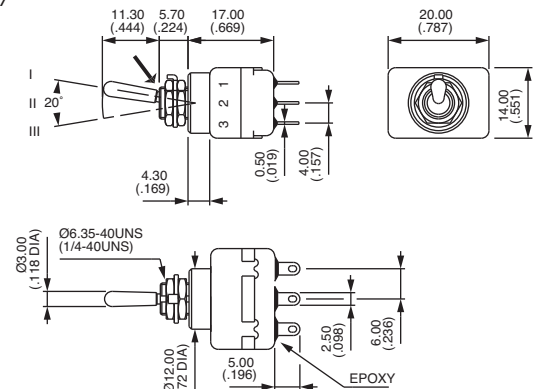
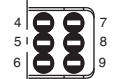
## Solder lug terminals - three pole



11156  
11159  
11157  
11158

|     | I   | II  | III |
|-----|-----|-----|-----|
| ON  | -   | ON  |     |
| ON  | OFF | ON  |     |
| MOM | OFF | MOM |     |
| ON  | OFF | MOM |     |

→ Keyway



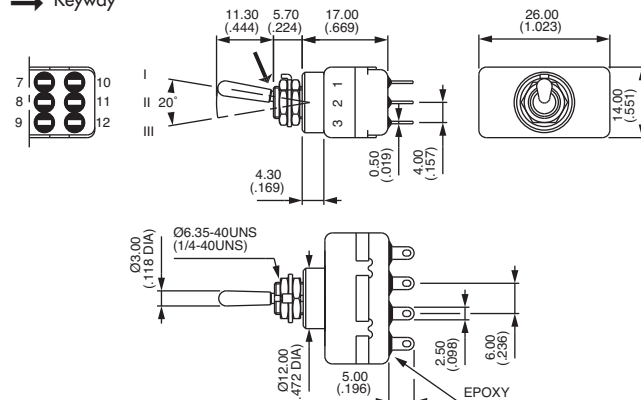
## Solder lug terminals - four pole



11166  
11169  
11167  
11168

|     |     |     |
|-----|-----|-----|
| II  | II  | III |
| ON  | -   | ON  |
| ON  | OFF | ON  |
| MOM | OFF | MOM |
| ON  | OFF | MOM |

→ Keyway



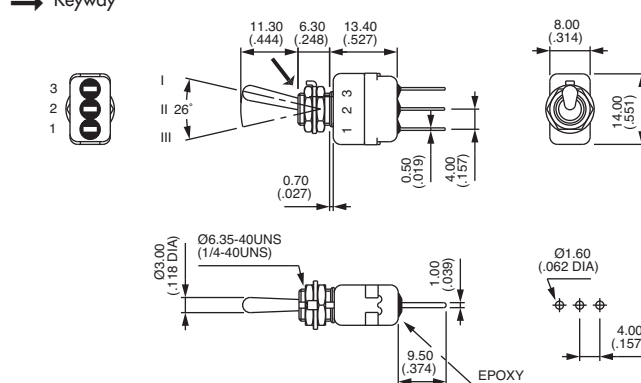
## Straight PC terminals - single pole ▲



11236

|    |    |     |
|----|----|-----|
| II | II | III |
| ON | -  | ON  |

→ Keyway



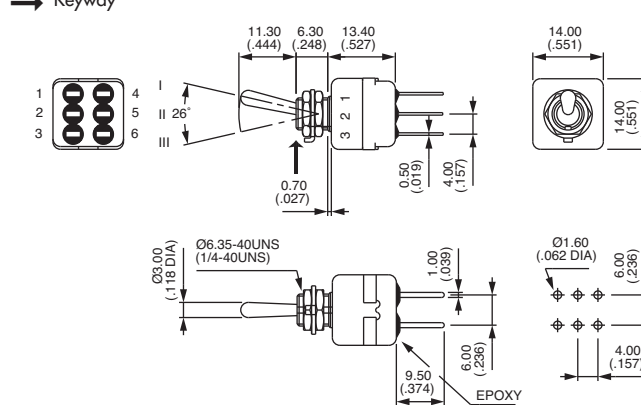
## Straight PC terminals - double pole ▲



11246

|    |    |     |
|----|----|-----|
| II | II | III |
| ON | -  | ON  |

→ Keyway



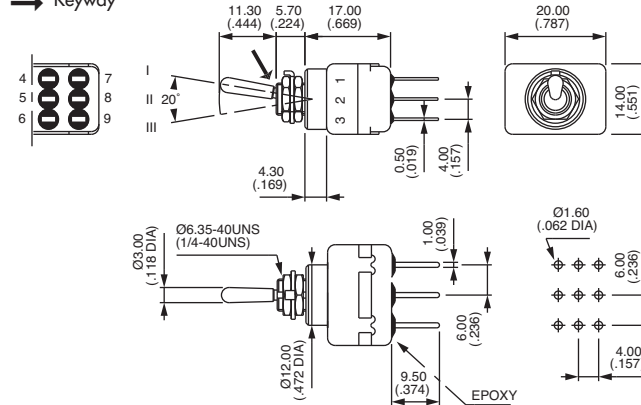
## Straight PC terminals - three pole ▲



11256

|    |    |     |
|----|----|-----|
| II | II | III |
| ON | -  | ON  |

→ Keyway



## Professional toggle switches - threaded bushing Ø 6,35 (1/4)

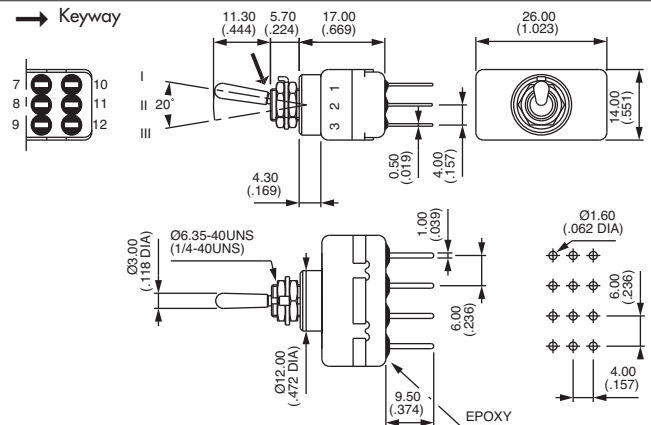
MODEL  
STRUCTURE

### Straight PC terminals - four pole ▲



11266

ON - ON

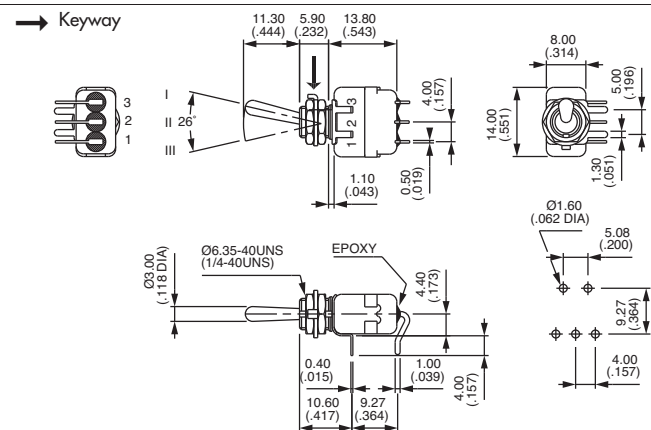


### Right angle terminals - horizontal - single pole

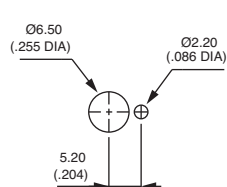


**11136W**

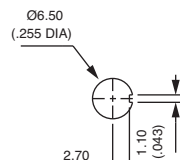
ON - ON



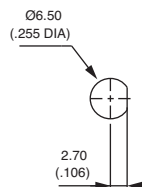
## PANEL CUT-OUT



## Standard

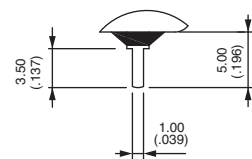


With **K**  
sealing option



With **X408**  
sealing option

▲ **3,5 mm (.138) short terminals** available for function 6, as well as for functions 9, 7 and 8. On request.

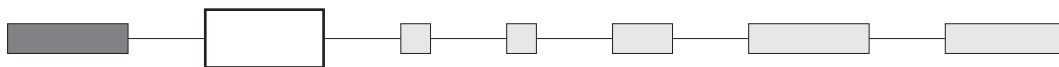




# 11000 series

Professional toggle switches - threaded bushing Ø 6,35 (1/4)

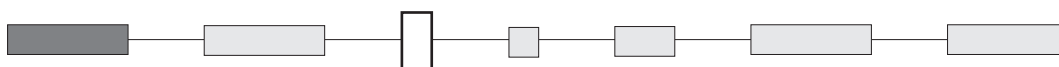
## CONTACT MATERIALS



- A** Silver
- AD2** Gold plated silver (2 micron gold)
- D** Solid gold rivet

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

## FINISH



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

Other finish, consult factory.

## SEALING

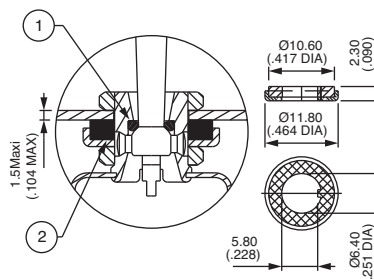


Epoxy sealed terminals are standard.

- Blank** No sealing except standard
- K** Front panel sealing by 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.



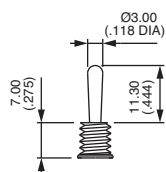
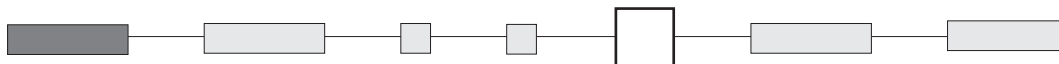
Not available on 11000W model.



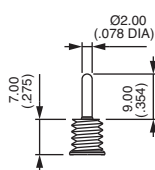
① O-ring ② Sealing washer

Sealing by two O-rings, see X408 under "Special options".  
Sealing boots : see section H.

## LEVERS



**Blank**  
Standard



**-26**  
Cylindrical

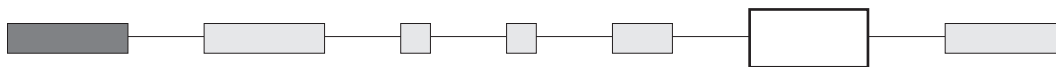
# 11000 series

Professional toggle switches - threaded bushing Ø 6,35 (1/4)

OPTIONS



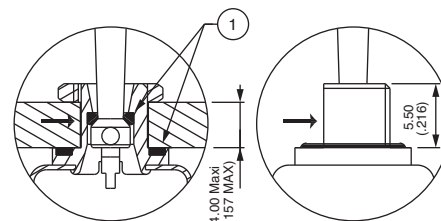
## SPECIAL OPTIONS



**X408** Front panel sealing by two O-rings. Flatted bushing for precise orientation.  
Protects the switch against water and dust.  
Panel seal withstands 1 bar pressure and remains sealed even when switch is operated.



Not available on 11000W model.



**X408**

→ Flat

① O-rings

**X780** Solid rivet, gold plated silver/nickel alloy

**X910** Switches for peak currents

Peak current up to 80A (1 ms) 60VDC - single/double pole



Single pole  
**11136 X910**

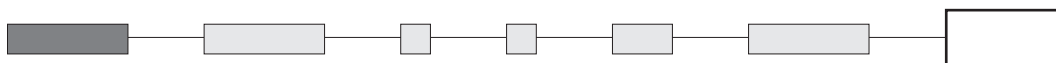
ON - ON

Double pole  
**11146 X910**

ON - ON

- Contacts : solid rivet - silver/nickel alloy (AgNi)
- Max. current/voltage rating :  
3/80A (1 ms) 60VDC - 10.000 cycles
- Further specifications and dimensions : see previous pages
- General information on peak currents : see end of catalogue.

## AGENCY APPROVALS



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

**Availability** : consult factory for details of approved models.

**Marking** : to order switches marked CECC , complete above box with "CECC".  
Blank : no agency approval required.

# 12000 series

## Professional toggle switches - threaded bushing Ø 11,9 (15/32)

### Specifications

#### ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
  - silver contacts (A-AD2-X780) : 4A 30VDC
  - gold contacts (D) : 100mA 30VDC
- Minimum load : AD2-X780-D contacts : 10mA 50mV, 10µA 5V min.
- Initial contact resistance : 10 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- 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 :

Peak currents, refer to "Special options".

| Contacts                     | Max. current/voltage rating                   | Number of cycles |             |
|------------------------------|-----------------------------------------------|------------------|-------------|
|                              |                                               | 2 positions      | 3 positions |
| A                            | 4A 30VDC                                      | 50.000           | 50.000      |
| AD2<br>X780                  | 4A 30VDC<br>(Gold plating : 100mA 30VDC max.) | 20.000           | 20.000      |
| D                            | 100mA 30VDC                                   | 80.000           | 50.000      |
| Low level or mechanical life |                                               | 150.000          | 100.000     |

#### MATERIALS

- Case : diallylphthalate (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.  
Tin dipped terminals available, see "Special options".

#### 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

#### RELIABILITY - RUN-IN TEST

Upon request, each individual switch can be submitted to a low level run-in test of 50 or 250 cycles to ensure suitability for special applications requiring a very high level of reliability (military, space, etc.).

#### 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.

**Dimensions** : first dimensions are in mm while inches are shown as bracketed numbers.



**Packaging unit** : 2 pole models : 25 pieces - 3 & 4 pole models : 20 pieces.

# 12000 series

Professional toggle switches - threaded bushing Ø 11,9 (15/32)

Overview



12

SERIES

## Terminals and bushings

- 1 Solder lug terminals
- 2 Straight PC terminals

All models with threaded bushing Ø 11,9 (15/32). Bushing Ø 15 (.590), see X822 under "Special options".

## Number of poles

- 4 Double pole
- 5 Three pole
- 6 Four pole

## Electrical functions

|   |     |     |       |
|---|-----|-----|-------|
| 6 | ON  | -   | ON    |
| 9 | ON  | OFF | ON    |
| 7 | MOM | OFF | MOM   |
| 8 | ON  | OFF | MOM   |
| 5 | -   | ON  | MOM   |
| 4 | ON  | ON  | ON    |
|   | ON  | ON  | MOM ▲ |
|   | MOM | ON  | MOM ▲ |

### Function 4

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

## Momentary for function 4

- 1R ON ON MOM
- 2R MOM ON MOM

Leave blank for other functions.

OPTIONS

## Finish

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

Satin chrome finish, see "Special options".

## Fluorescent tip

- Blank** None
  - 038** White fluorescent tip to lever
- Available with matt black finish (G) only.

## Special options

- Blank** No special requirement
  - X408** Front panel sealing by two O-rings
  - X822** Bushing Ø 15 (.590)
- Other : see foll. pages.

## Contact materials

- A** Silver
- AD2** Silver, gold plated (2 micron gold))
- D** Solid gold rivet

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 foll. pages.

## Approvals

### CECC

Availability : Consult factory for details of approved models.



**NOTICE** : please note that not all combinations of above numbers are available. Refer to the following pages for further information.

## ABOUT THIS SERIES

On the following pages, you will find successively :

- model structure of switches
- options in the same order as in above chart

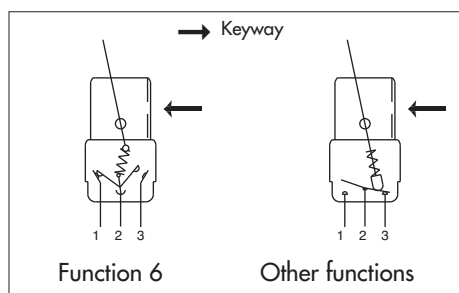


**Sealing boots** are available to protect the switches against dust and water. They are presented in section H.



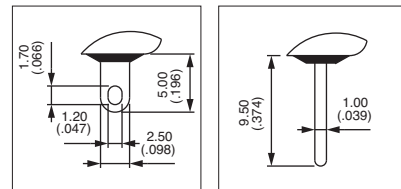
**Mounting accessories** : standard hardware supplied with all models : 2 hex nuts 14 (.551) across flats and 1 locking ring. Standard and special hardware available are presented in section I.

**Security caps** are available to prevent inadvertent lever operation. They are presented in section I.

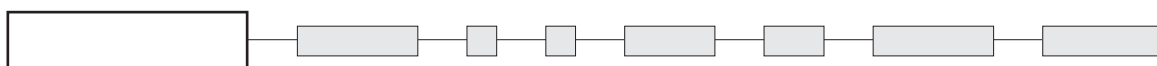


- Epoxy sealed terminals standard

| Typical angle of throw (A) |     |
|----------------------------|-----|
| Function 6                 | 26° |
| Functions 9, 7, 8, 4       | 20° |
| Function 5                 | 12° |



### MODEL STRUCTURE

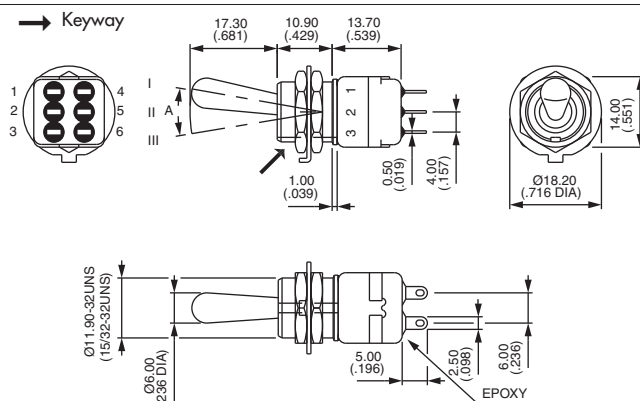


Shown with standard lever

### Solder lug terminals - double pole



|           |     |     |     |
|-----------|-----|-----|-----|
| 12146     | ON  | -   | ON  |
| 12149     | ON  | OFF | ON  |
| 12147     | MOM | OFF | MOM |
| 12148     | ON  | OFF | MOM |
| 12144*    | ON  | ON  | ON  |
| 12144 1R* | ON  | ON  | MOM |
| 12144 2R* | MOM | ON  | MOM |
| 12145     | -   | ON  | MOM |

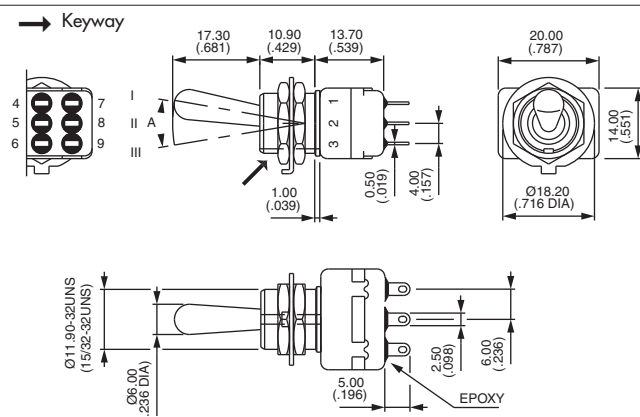


\* Function 4 : SP in DP case - connections, see end of catalogue.

### Solder lug terminals - three pole



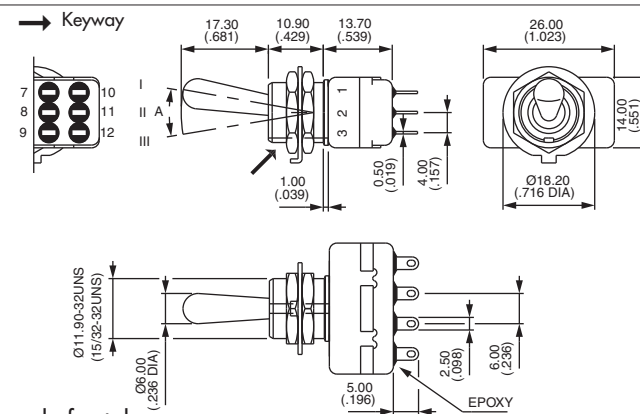
|       |     |     |     |
|-------|-----|-----|-----|
| 12156 | ON  | -   | ON  |
| 12159 | ON  | OFF | ON  |
| 12157 | MOM | OFF | MOM |
| 12158 | ON  | OFF | MOM |



### Solder lug terminals - four pole



|           |     |     |     |
|-----------|-----|-----|-----|
| 12166     | ON  | -   | ON  |
| 12169     | ON  | OFF | ON  |
| 12167     | MOM | OFF | MOM |
| 12168     | ON  | OFF | MOM |
| 12164*    | ON  | ON  | ON  |
| 12164 1R* | ON  | ON  | MOM |
| 12164 2R* | MOM | ON  | MOM |



\* Function 4 : DP in 4P case - connections, see end of catalogue.

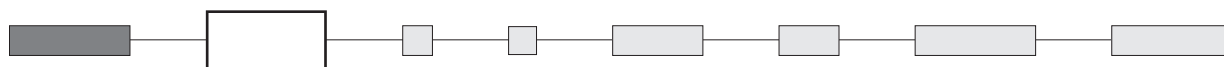




# 12000 series

Professional toggle switches - threaded bushing Ø 11,9 (15/32)

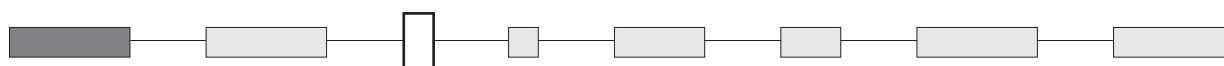
## CONTACT MATERIALS



- 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).

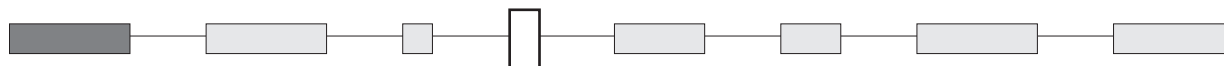
## FINISH



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

For satin chrome finish, see "Special options".

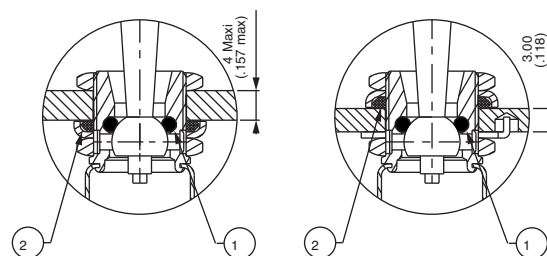
## SEALING



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.



① O-ring ② Sealing washer

Sealing by two O-rings, see X408 under "Special options".  
Sealing boots : see section H.

## FLUORESCENT TIP



- Blank** None

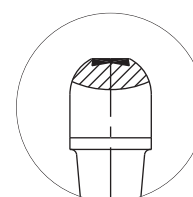
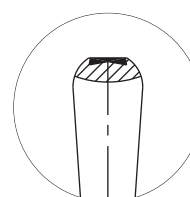
- 038** White fluorescent tip.  
Becomes luminous when submitted to ultra-violet rays.



Available with matt black finish (option G) only.

Standard lever

Locking lever

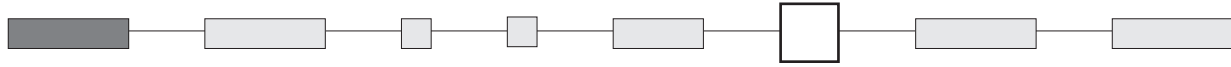


# 12000 series

Professional toggle switches - threaded bushing Ø 11,9 (15/32)

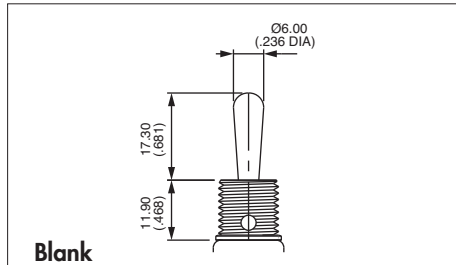
OPTIONS  
● ● ●

## ACTUATORS



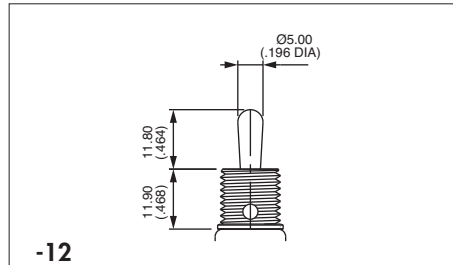
### Levers

Dash compulsory before lever code.



Blank

Standard



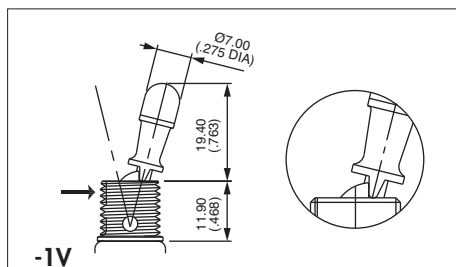
-12

Short lever

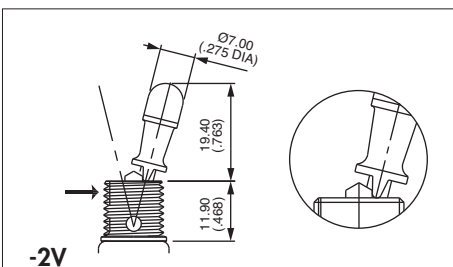
Security caps : see section I.

### Locking levers

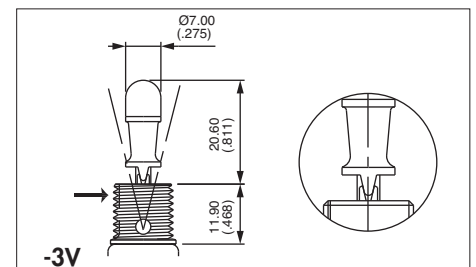
→ Keyway



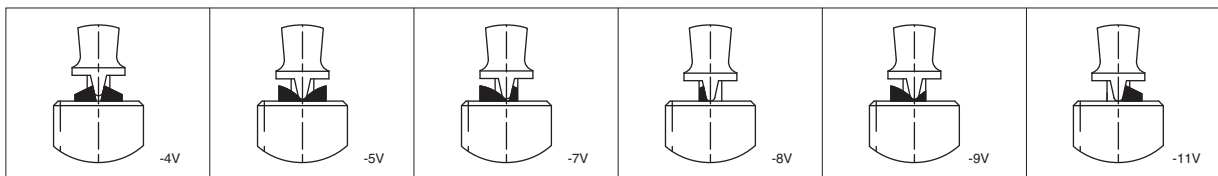
-1V  
1 locked position (function 6)  
Typical angle of throw : 26°



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



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



Functions 9 & 4

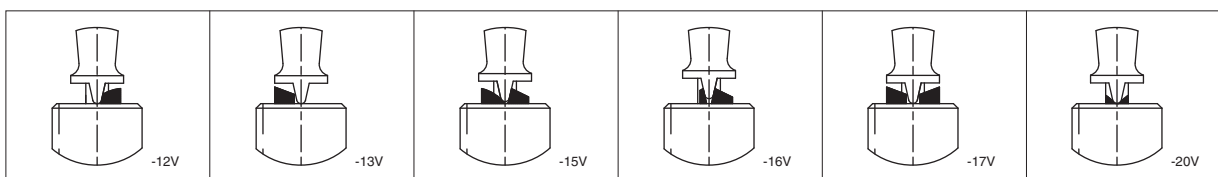
Functions 7 & 442R

Functions 8 & 441R

Functions 8, 9, 44 & 441R

Functions 8 & 441R

Functions 8, 9, 44 & 441R



Functions 8 & 441R

Functions 8 & 441R

Functions 8 & 441R

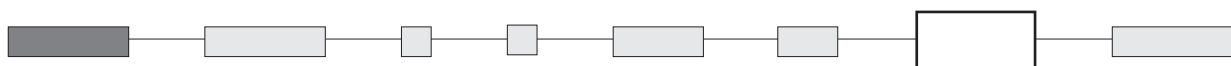
Functions 4 & 9

Functions 7 & 442R

Functions 9 & 44

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

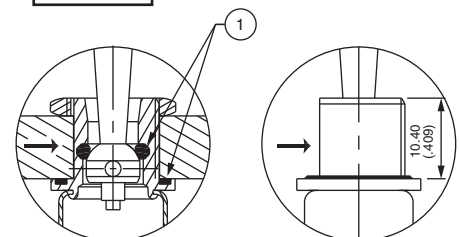
## SPECIAL OPTIONS



**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.**



→ Flat ① O-rings



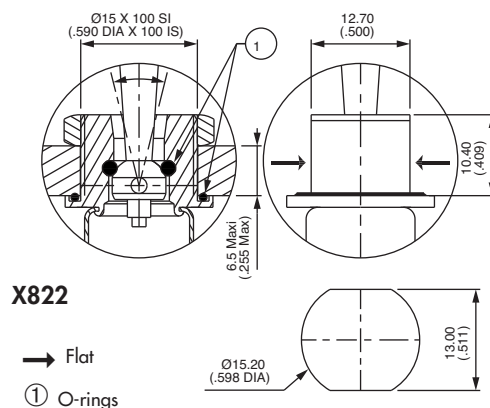
# 12000 series

Professional toggle switches - threaded bushing Ø 11,9 (15/32)

## SPECIAL OPTIONS (continued)

**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

Peak current up to 80A (1 ms) 60VDC - double pole

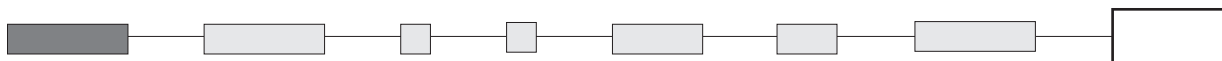


12146 X910

ON - ON

- Contacts : solid rivet - silver/nickel alloy (AgNi)
- Max. current/voltage rating :  
3/80A (1 ms) 60VDC - 10.000 cycles
- Further specifications and dimensions : see previous pages
- General information on peak currents : see end of catalogue.

## AGENCY APPROVAL



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

**Availability** : consult factory for details of approved models.

**Marking** : to order switches marked CECC, complete above box with "CECC".  
Blank : no agency approval required.