

11000 and 12000 series

Professional toggle switches

Distinctive features

UG1410A-R1



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 X780	4A 30VDC (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.

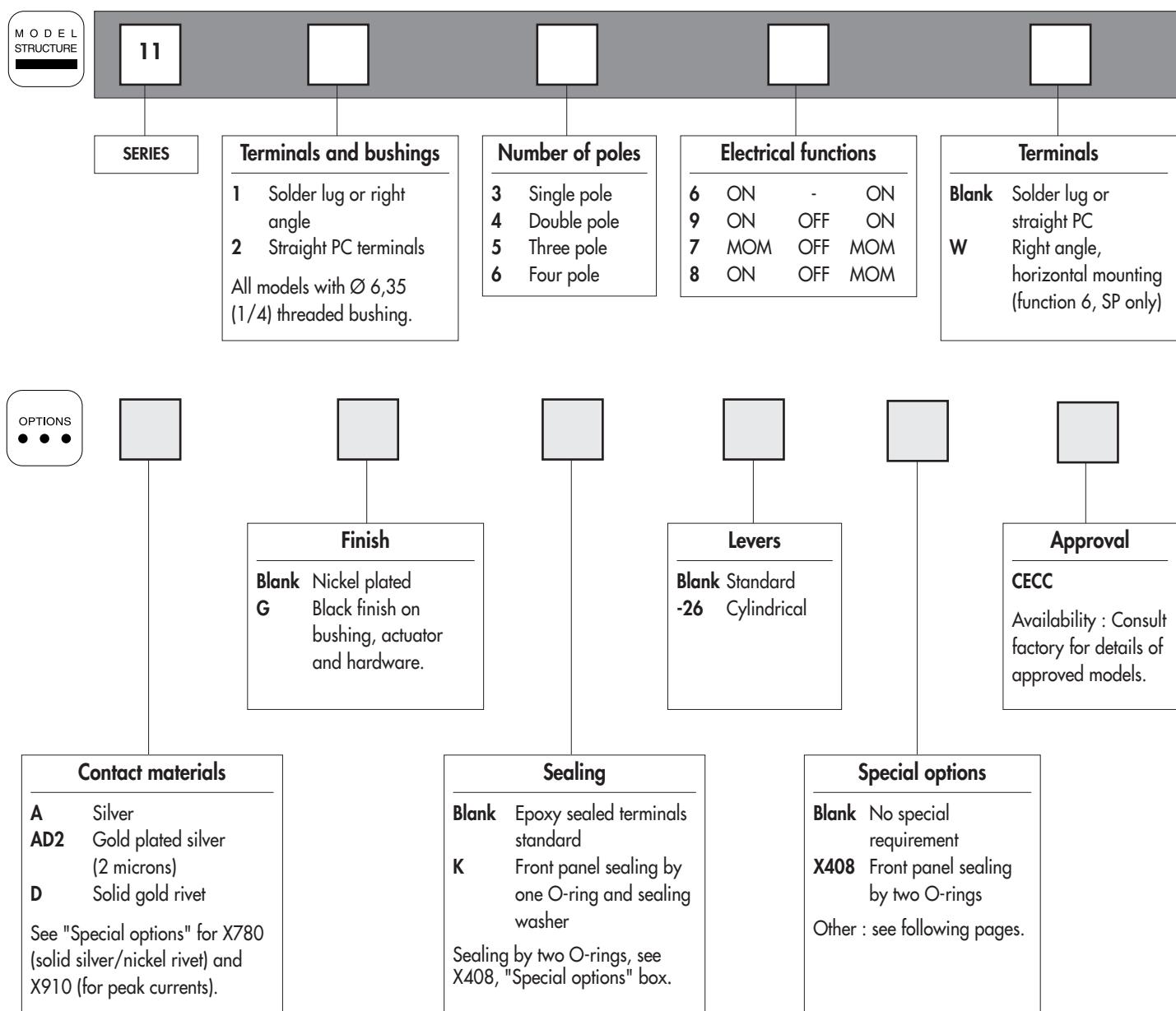


Packaging unit : 25 pieces or 50 pieces depending on models.

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.

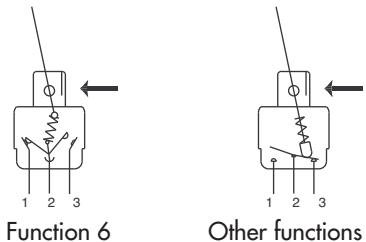
11000 series

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

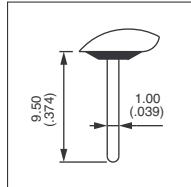
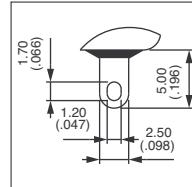
MODEL
STRUCTURE



→ Keyway



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



A

MODEL
STRUCTURE



Shown with standard lever

Solder lug terminals - single pole

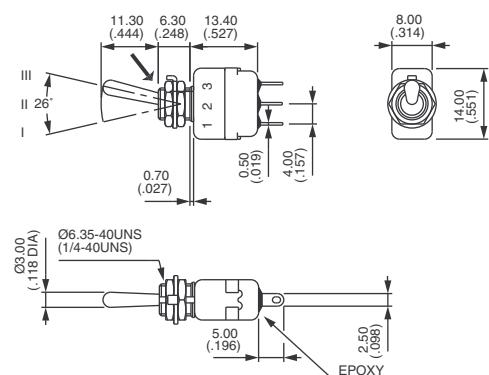


11136
11139
11137
11138

I II III

ON - ON
ON OFF ON
MOM OFF MOM
ON OFF MOM

→ Keyway



Solder lug terminals - double pole

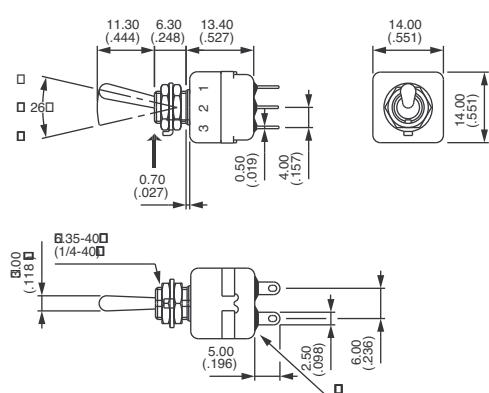


11146
11149
11147
11148

I II III

ON - ON
ON OFF ON
MOM OFF MOM
ON OFF MOM

→ Keyway



Solder lug terminals - three pole

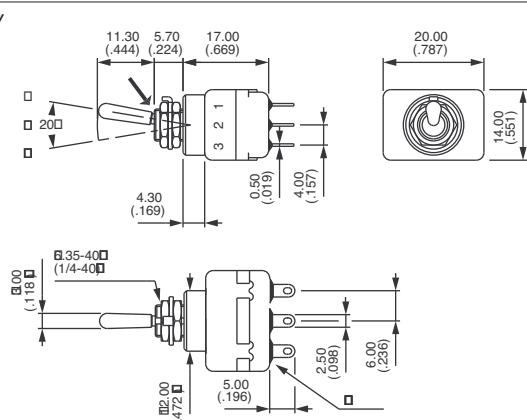


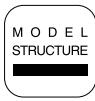
11156
11159
11157
11158

I II III

ON - ON
ON OFF ON
MOM OFF MOM
ON OFF MOM

→ Keyway

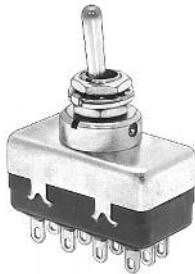




11000 series

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

Solder lug terminals - four pole

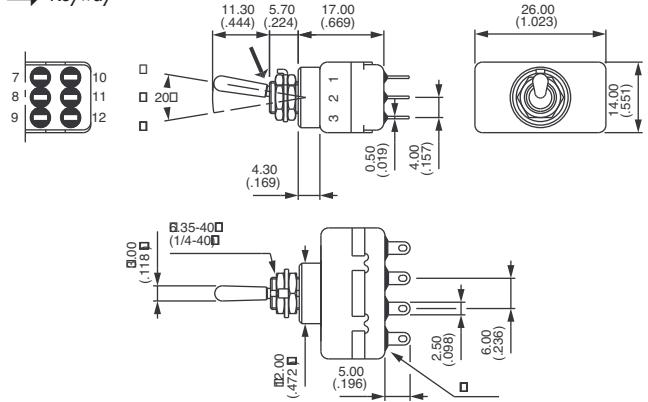


11166
11169
11167
11168

II II III

ON - ON
ON OFF ON
MOM OFF MOM
ON OFF MOM

→ Keyway



Straight PC terminals - single pole ▲

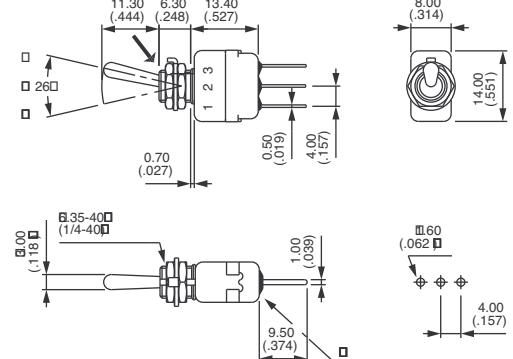


11236

II II III

ON - ON

→ Keyway



Straight PC terminals - double pole ▲

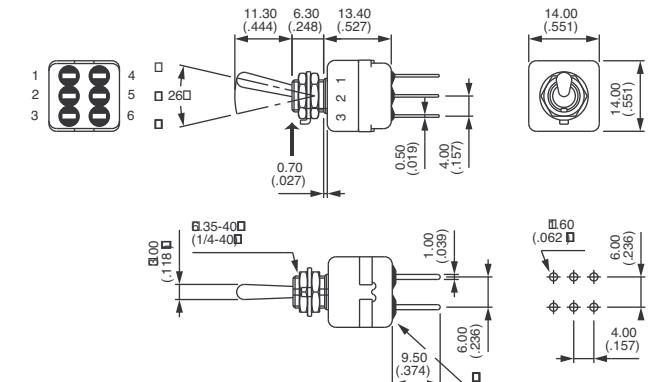


11246

II II III

ON - ON

→ Keyway



Straight PC terminals - three pole ▲

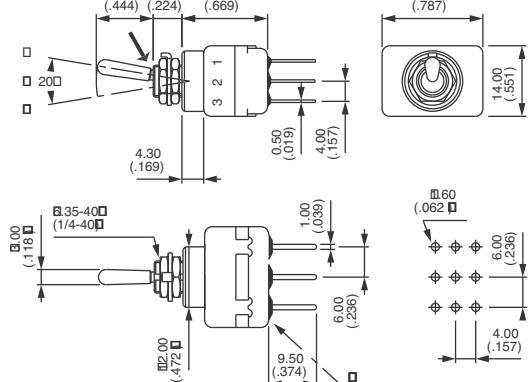


11256

II II III

ON - ON

→ Keyway

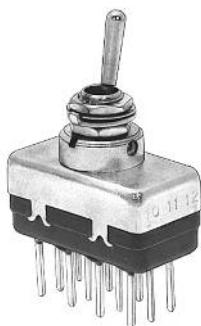


11000 series

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

MODEL
STRUCTURE
[]

Straight PC terminals - four pole ▲



11266

→ Keyway

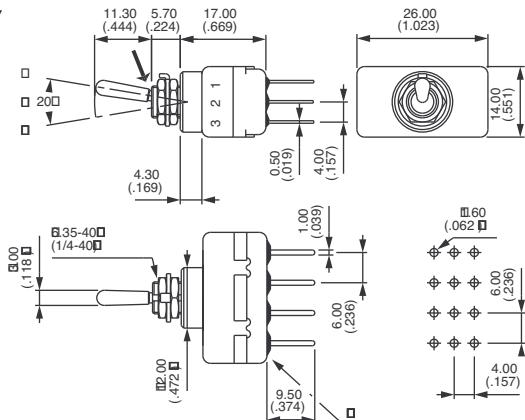
II II III

11.30 (.444) 5.70 (.224) 17.00 (.669)

7 10
8 11
9 12

20

ON - ON



Right angle terminals - horizontal - single pole



11136W

→ Keyway

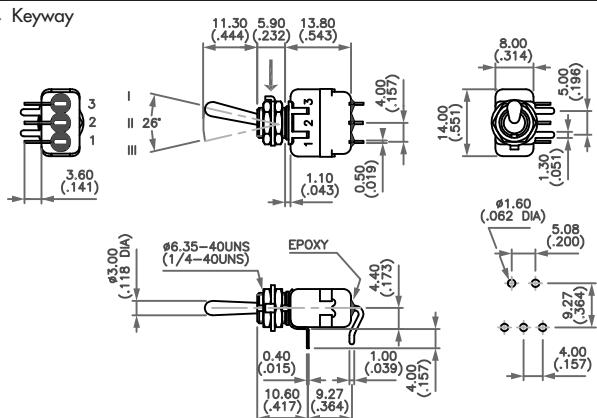
I II III

11.30 (.444) 5.90 (.232) 13.80 (.543)

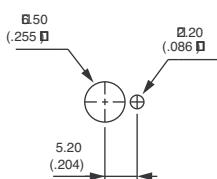
3.60 (.141)

26°

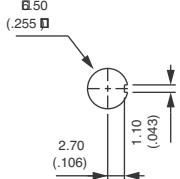
ON - ON



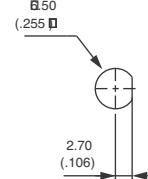
PANEL CUT-OUT



Standard

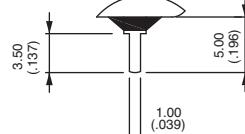


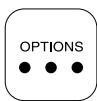
With K
sealing option



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.

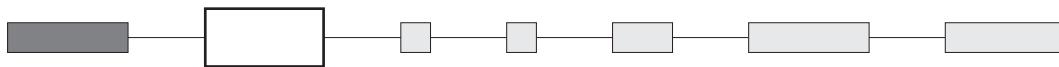




11000 series

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

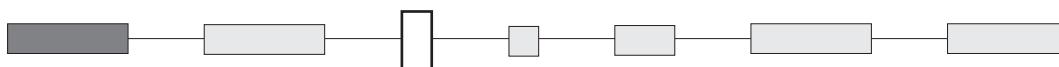
CONTACT MATERIALS



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).

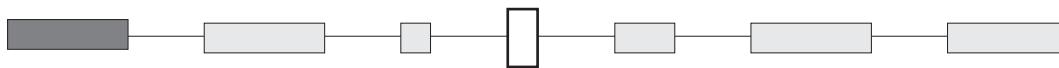
FINISH



Blank Nickel plated
G Black finish on bushing, lever and hardware.

Other finish, consult factory.

SEALING

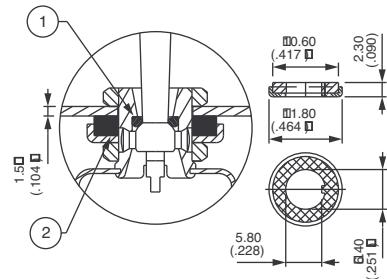


Epoxy sealed terminals are standard.

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.



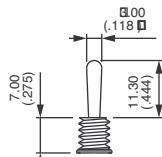
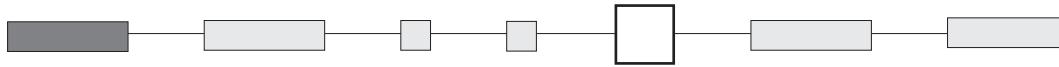
Not available on 11000W model.



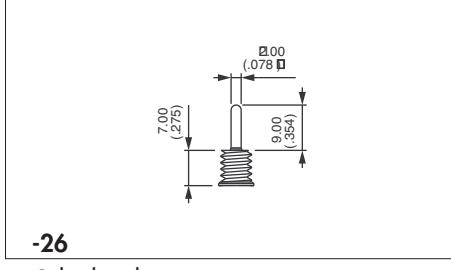
① O-ring ② Sealing washer

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

LEVERS



Blank
Standard



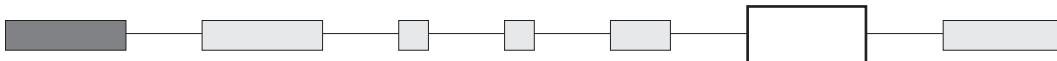
-26
Cylindrical

11000 series

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



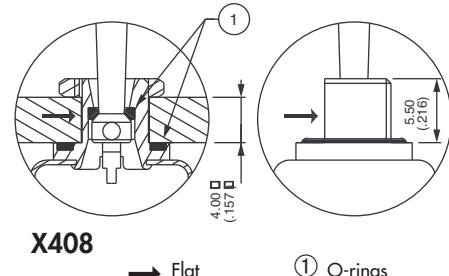
SPECIAL OPTIONS



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

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

- Contacts : solid rivet - silver/nickel alloy (AgNi)

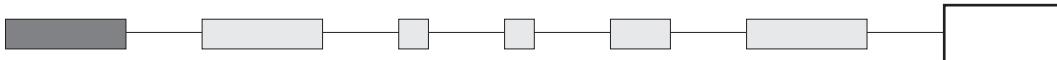
- Max. current/voltage rating :
3/80A (1 ms) 60VDC - 10.000 cycles

- Further specifications and dimensions : see previous pages
- General information on peak currents : see end of catalogue.

Double pole
11146 X910

ON - ON

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 X780	4A 30VDC (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.

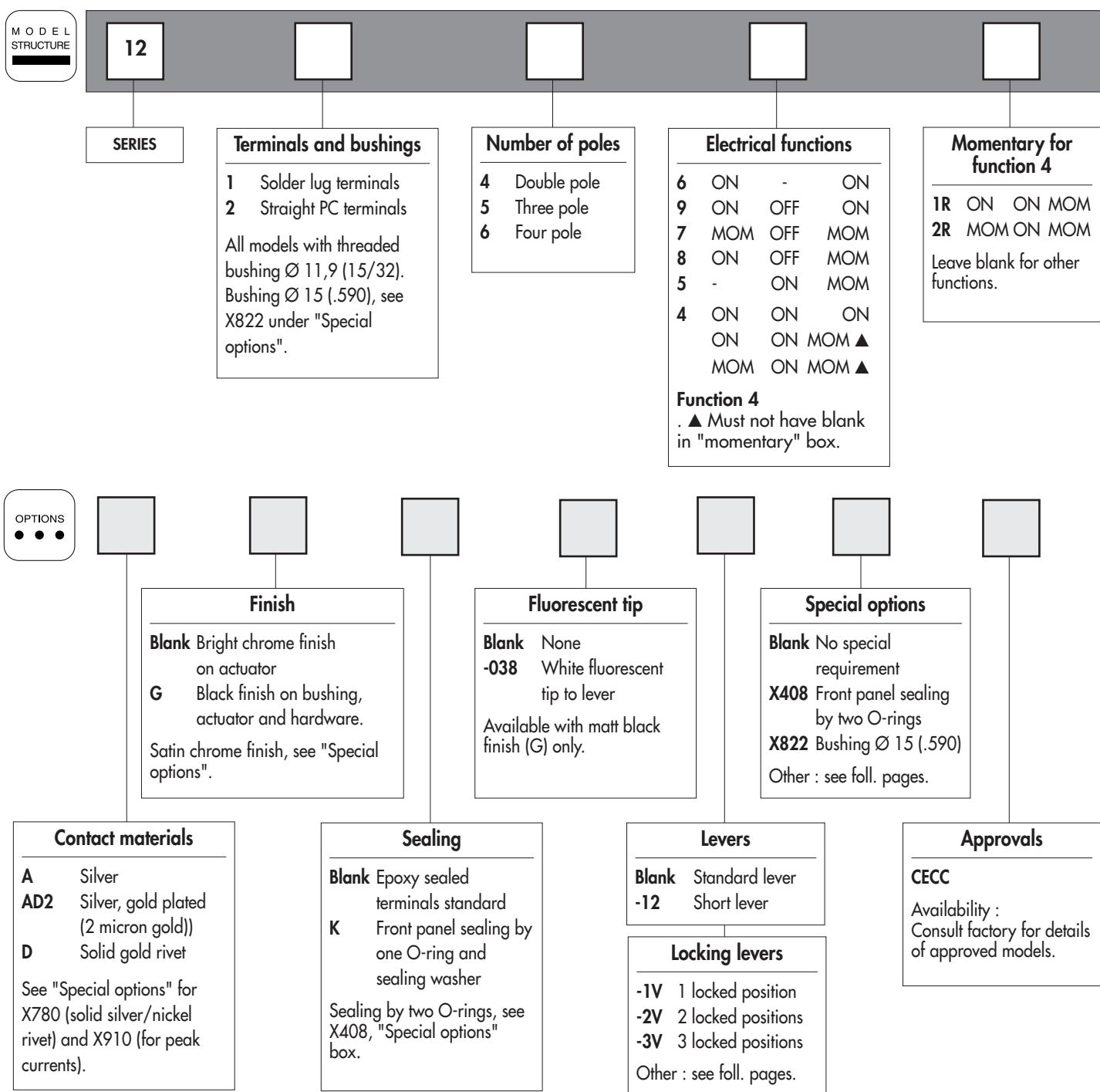


Packaging unit : 2 pole models : 25 pieces - 3 & 4 pole models : 20 pieces.

12000 series

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

Overview



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

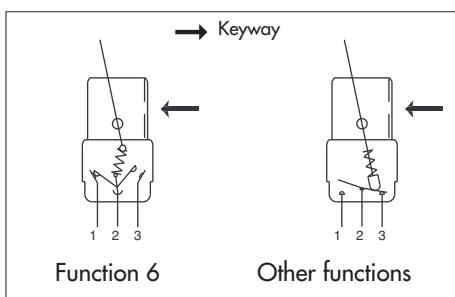


Sealing boots are available to protect the switches against dust and water. They are presented in section H.



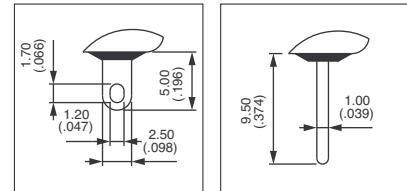
Mounting accessories : standard hardware supplied with all models : 2 hex nuts 14 (.551) across flats and 1 locking ring.
Standard and special hardware available are presented in section I.

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

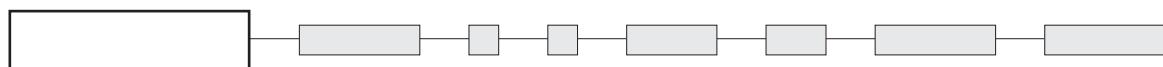


• Epoxy sealed terminals standard

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



MODEL STRUCTURE



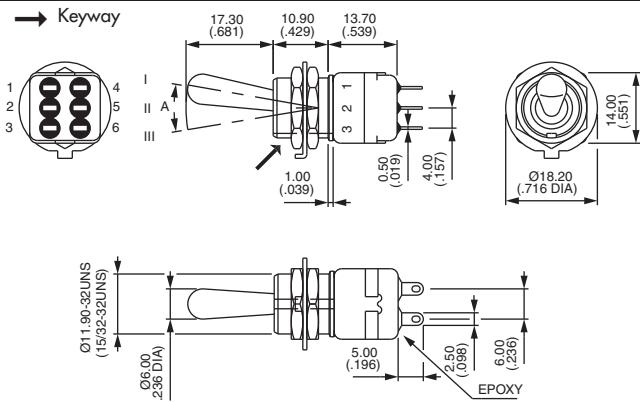
Shown with standard lever

Solder lug terminals - double pole



12146
12149
12147
12148
12144*
12144 1R*
12144 2R*
12145

ON - ON
ON OFF ON
MOM OFF MOM
ON OFF MOM
ON ON ON
ON ON MOM
MOM ON MOM
- ON MOM



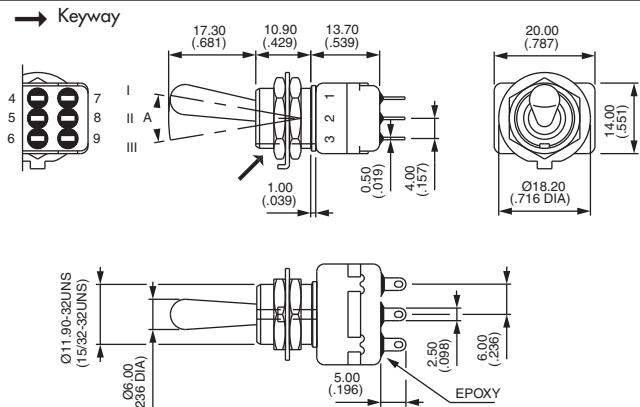
* Function 4 : SP in DP case - connections, see end of catalogue.

Solder lug terminals - three pole



12156
12159
12157
12158

ON - ON
ON OFF ON
MOM OFF MOM
ON OFF MOM

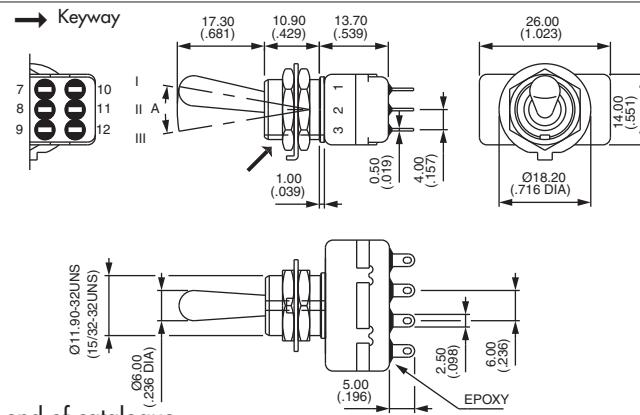


Solder lug terminals - four pole



12166
12169
12167
12168
12164*
12164 1R*
12164 2R*

ON - ON
ON OFF ON
MOM OFF MOM
ON OFF MOM
ON ON ON
ON ON MOM
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)

MODEL
STRUCTURE

Straight PC terminals : 12200

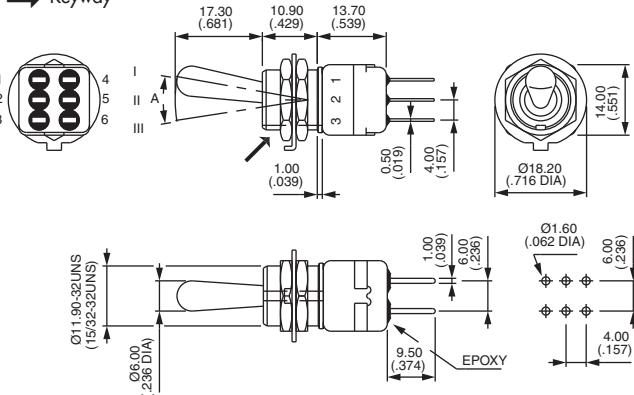
Straight PC terminals - double pole ▲



12246

I II III
ON - ON

→ Keyway



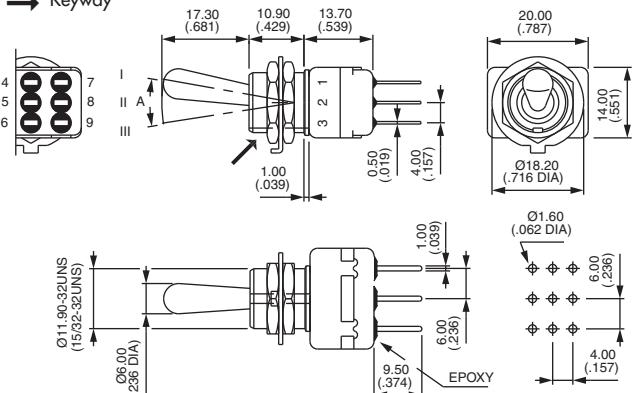
Straight PC terminals - three pole ▲



12256

I II III
ON - ON

→ Keyway



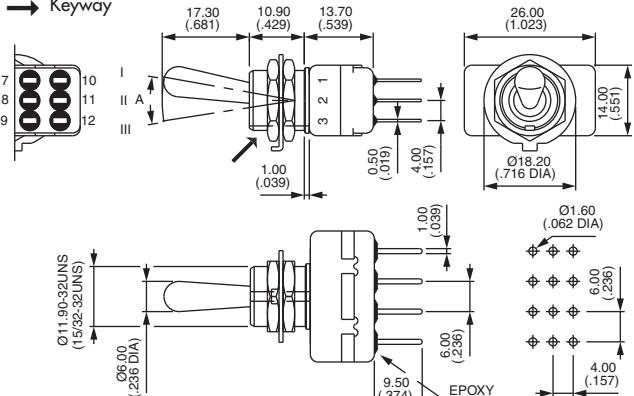
Straight PC terminals - four pole ▲



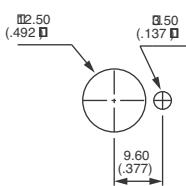
12266

I II III
ON - ON

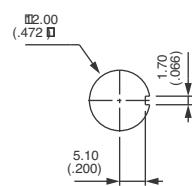
→ Keyway



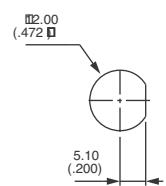
PANEL CUT-OUT



Standard

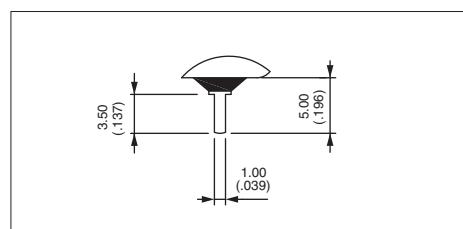


With K
sealing option



With X408
sealing option

▲ 3,5 mm (.138) short terminals available on request for function 6. Standard for functions 9, 7, 8, 4 and 5.

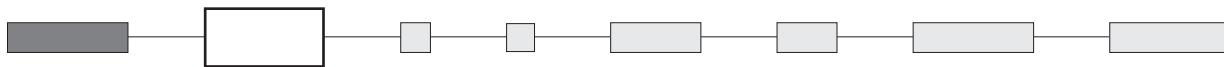




12000 series

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

CONTACT MATERIALS

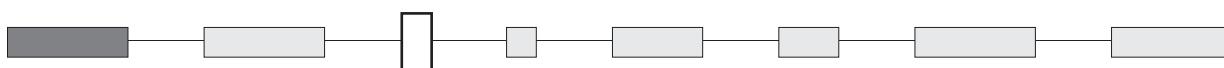


A Silver
AD2 Silver, gold plated (2 micron gold)
D Solid gold rivet (except functions 4 and 5)

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

A

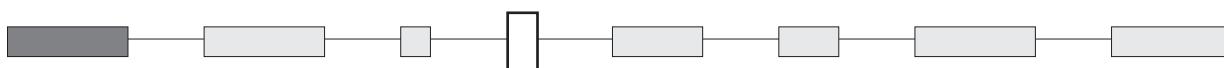
FINISH



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

For satin chrome finish, see "Special options".

SEALING

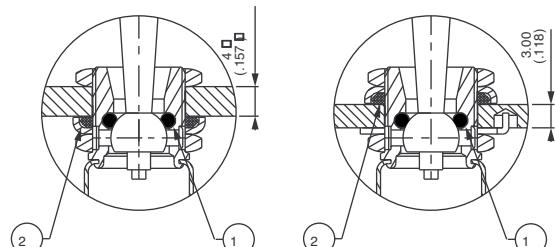


Epoxy sealed terminals are standard.

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.

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



① O-ring ② Sealing washer

FLUORESCENT TIP



Blank None

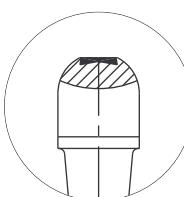
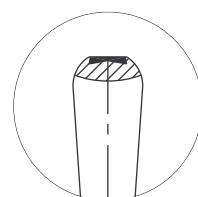
-038 White fluorescent tip.
 Becomes luminous when submitted to ultra-violet rays.



Available with matt black finish (option G) only.

Standard lever

Locking lever

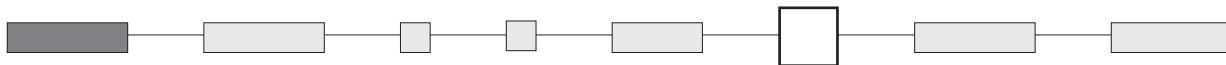


12000 series

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



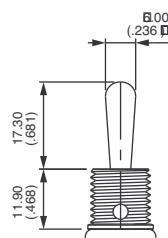
ACTUATORS



Levers

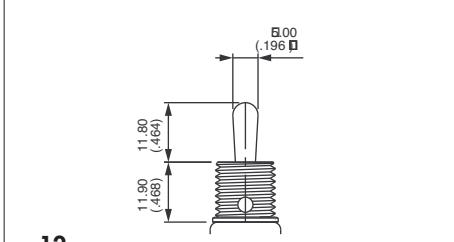
Dash compulsory before lever code.

A



Blank

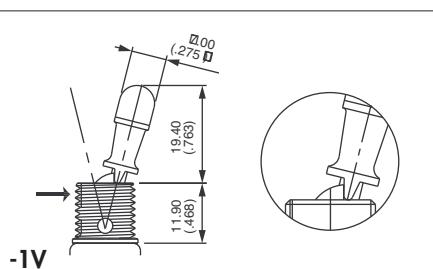
Standard



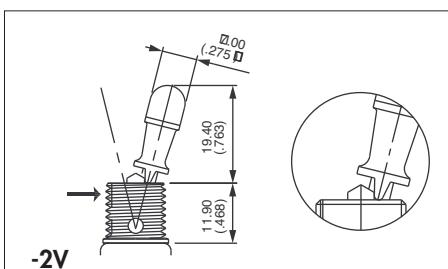
Short lever

Security caps : see section I.

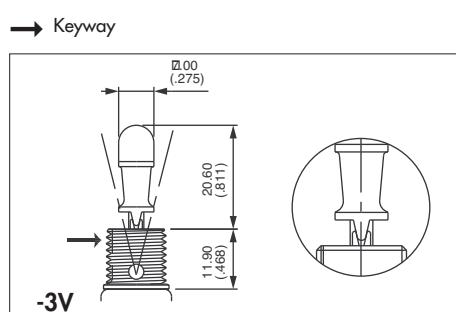
Locking levers



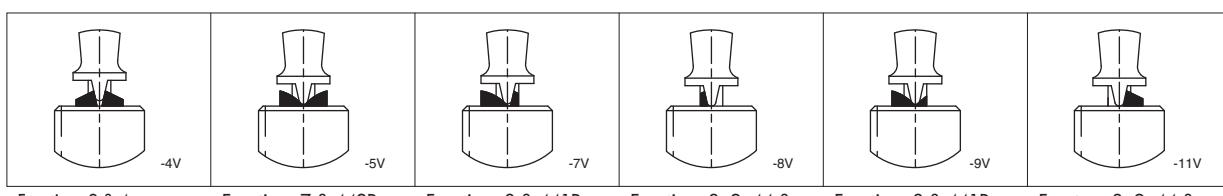
1 locked position (function 6)
Typical angle of throw : 26°



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



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



Functions 9 & 4

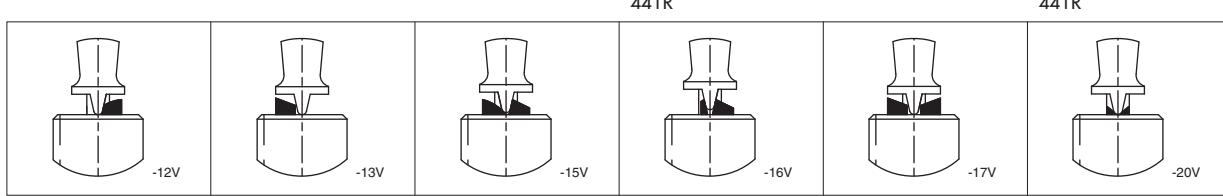
Functions 7 & 442R

Functions 8 & 441R

Functions 8, 9, 44 & 441R

Functions 8 & 441R

Functions 8, 9, 44 & 441R



Functions 8 & 441R

Funct. 8, 5 & 441R

Functions 8 & 441R

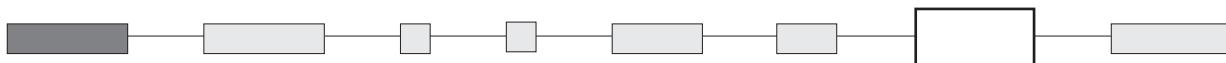
Functions 4 & 9

Functions 7 & 442R

Functions 9 & 44

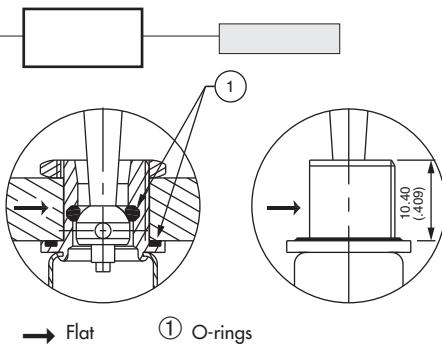
Note : -5V and -12V are not true locking levers : no pulling is required before actuation.

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

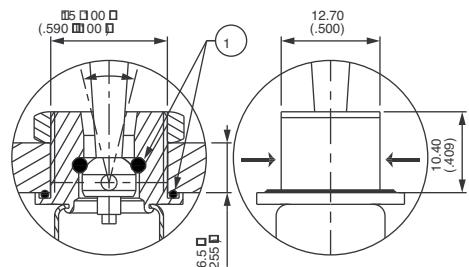


12000 series

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

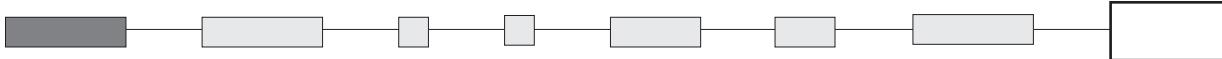


12146 X910

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.

Mouser Electronics

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