

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.

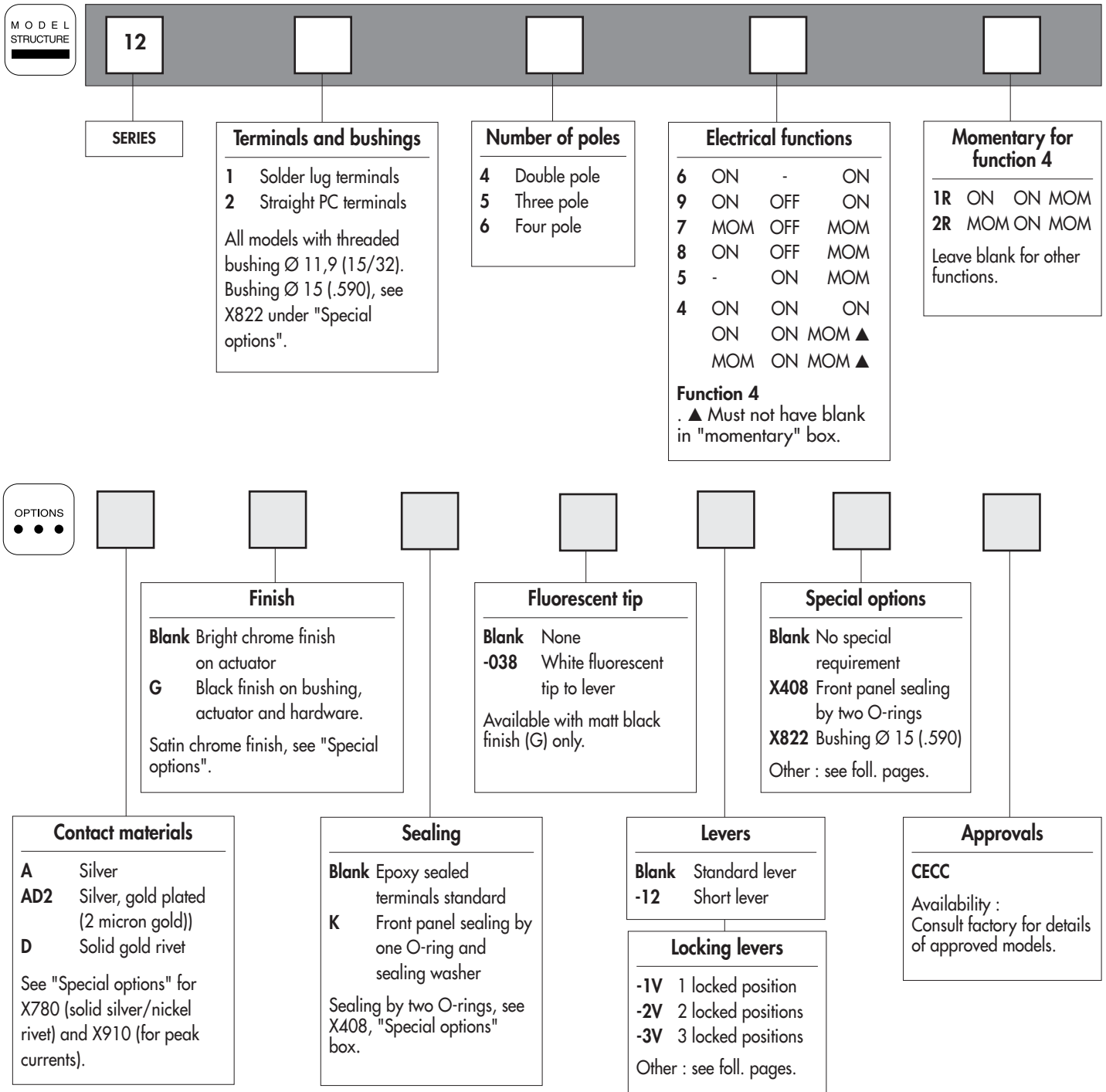


Packaging unit : 2 pole models : 25 pieces - 3 & 4 pole models : 20 pieces.

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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.



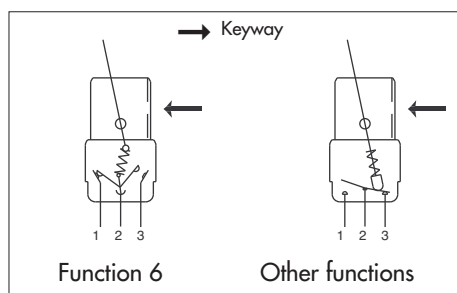
Mounting accessories : standard hardware supplied with all models : 2 hex nuts 14 (.551) across flats and 1 locking ring. Standard and special hardware available are presented in section I.

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

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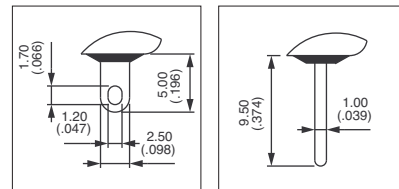
Professional toggle switches - threaded bushing Ø 11,9 (15/32)

Solder lug terminals : 12100

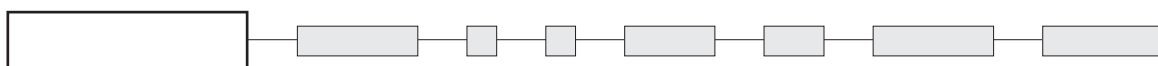


- Epoxy sealed terminals standard

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



MODEL STRUCTURE

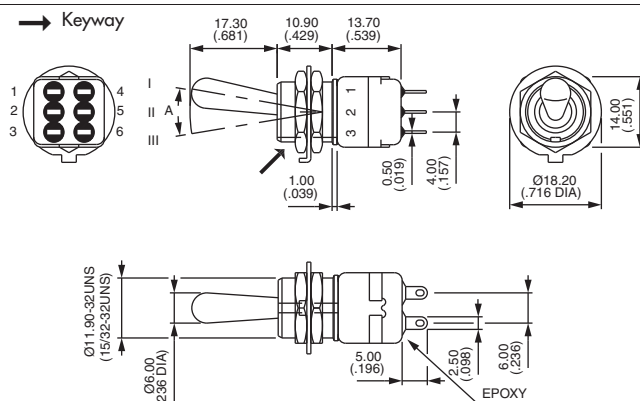


Shown with standard lever

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

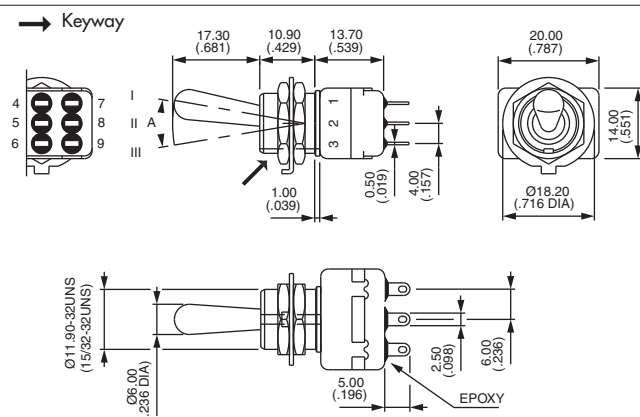


* Function 4 : SP in DP case - connections, see end of catalogue.

Solder lug terminals - three pole



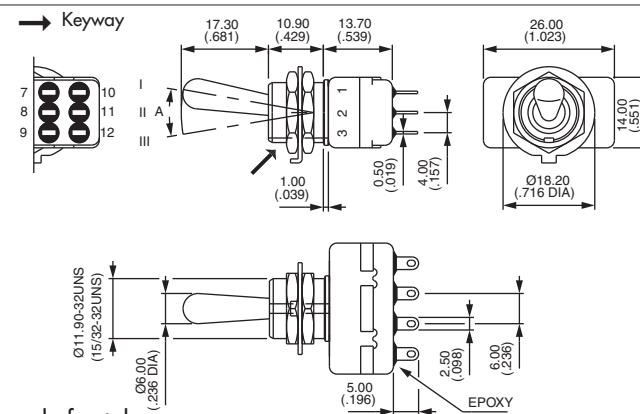
12156	ON	-	ON
12159	ON	OFF	ON
12157	MOM	OFF	MOM
12158	ON	OFF	MOM



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



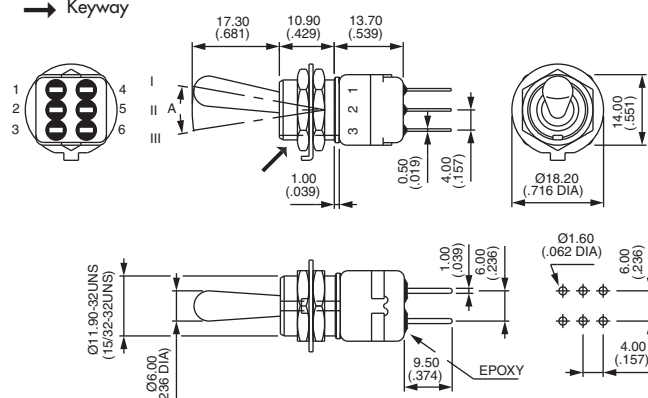
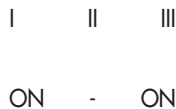
* Function 4 : DP in 4P case - connections, see end of catalogue.

Straight PC terminals : 12200

→ Keyway



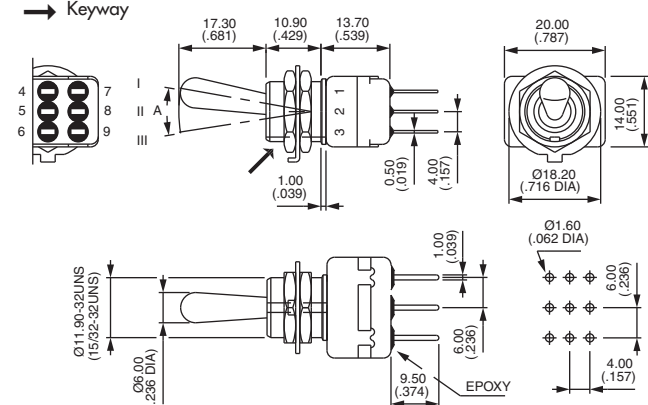
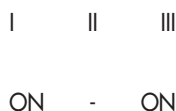
12246



→ Keyway



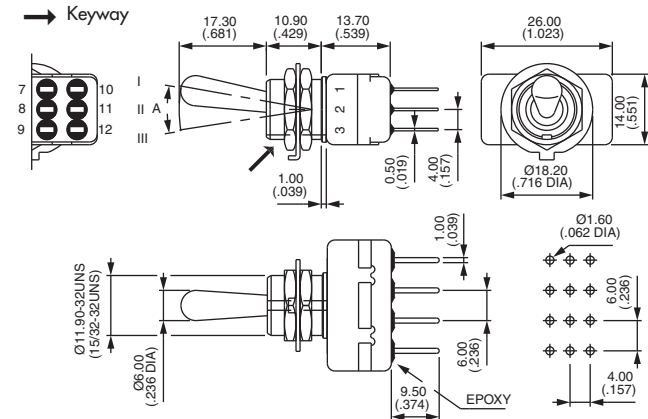
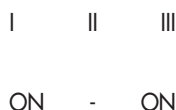
12256



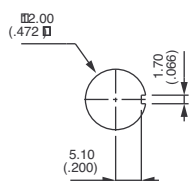
→ Keyway



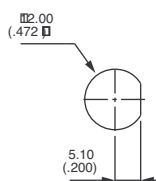
12266



Standard

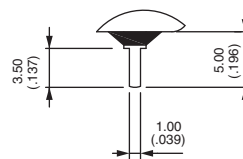


With **K**
sealing option



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.

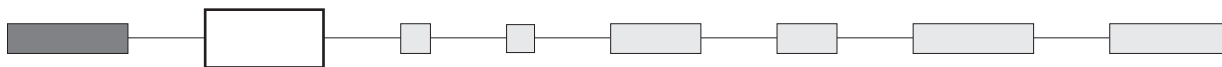




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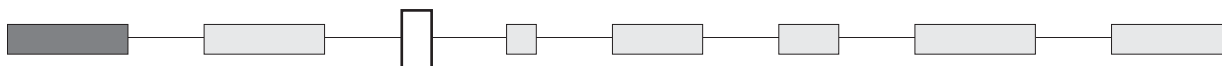
CONTACT MATERIALS



- 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).

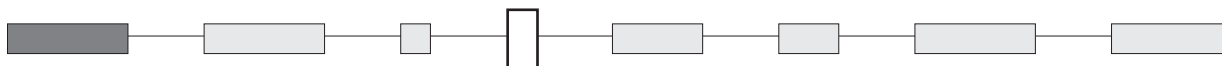
FINISH



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

For satin chrome finish, see "Special options".

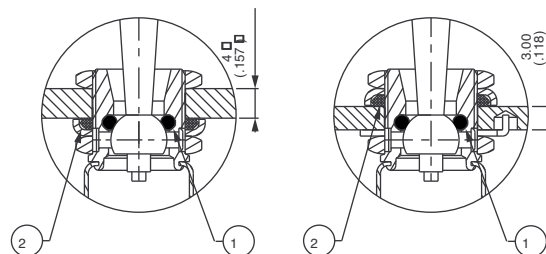
SEALING



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



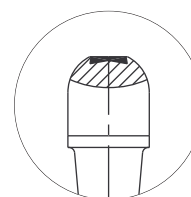
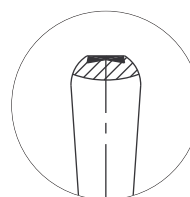
- Blank** None
- 038** White fluorescent tip. Becomes luminous when submitted to ultra-violet rays.



Available with matt black finish (option G) only.

Standard lever

Locking lever

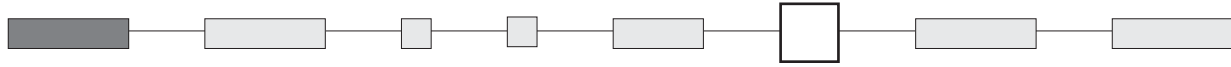


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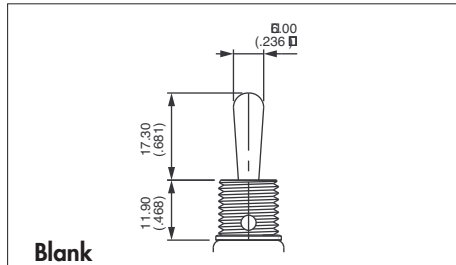
OPTIONS
● ● ●

ACTUATORS



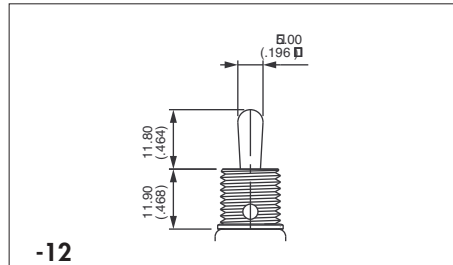
Levers

Dash compulsory before lever code.



Blank

Standard



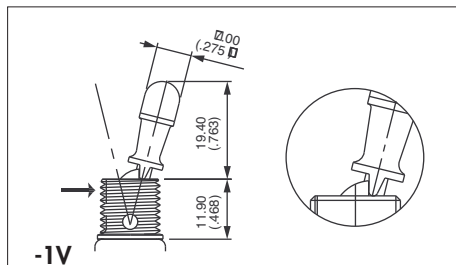
-12

Short lever

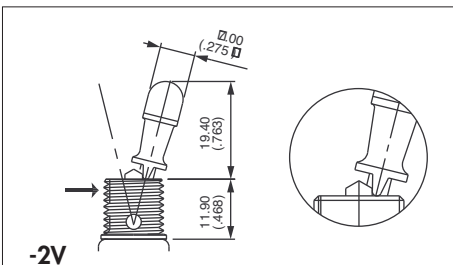
Security caps : see section I.

Locking levers

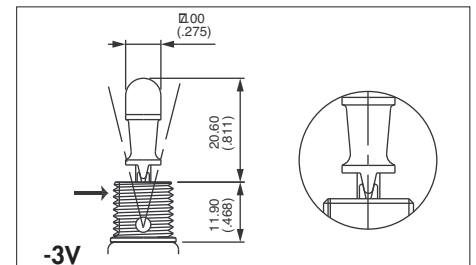
→ Keyway



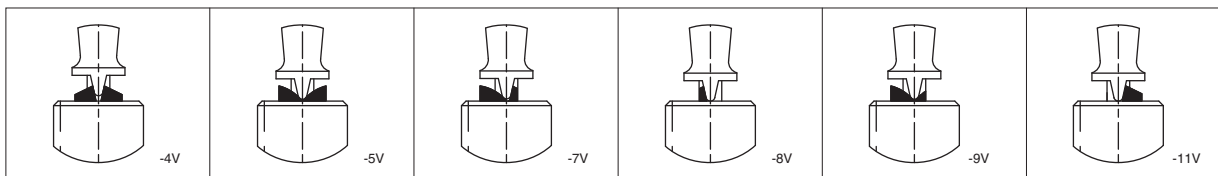
1 locked position (function 6)
Typical angle of throw : 26°



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

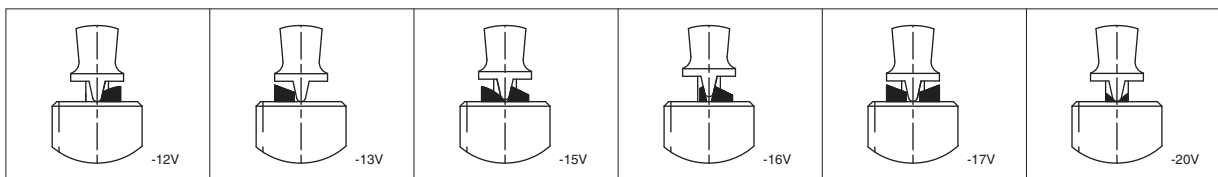
Functions 7 & 442R

Functions 8 & 441R

Functions 8, 9, 44 & 441R

Functions 8 & 441R

Functions 8, 9, 44 & 441R



Functions 8 & 441R

Func. 8, 5 & 441R

Functions 8 & 441R

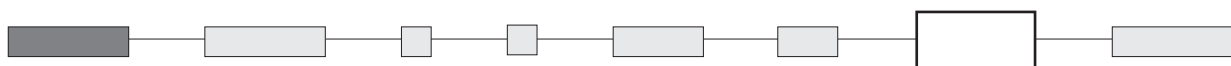
Functions 4 & 9

Functions 7 & 442R

Functions 9 & 44

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

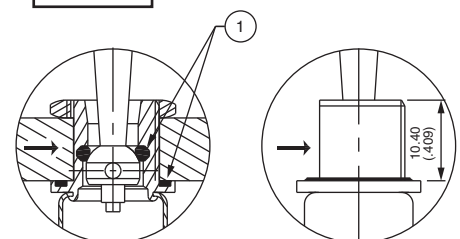
SPECIAL OPTIONS



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



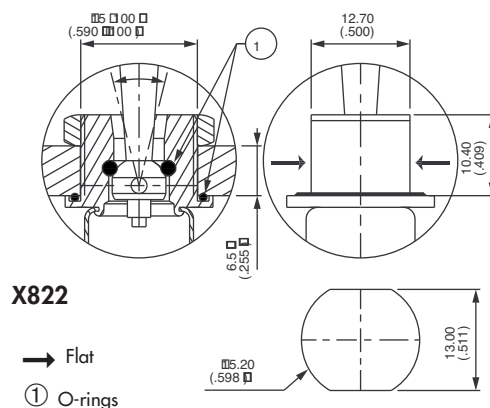
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SPECIAL OPTIONS (continued)

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

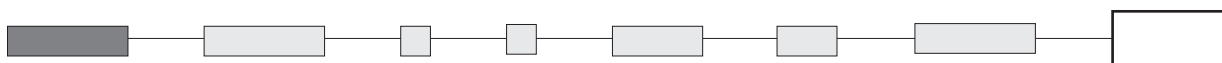


12146 X910

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.