

13000 series

Professional quick-break momentary pushbutton switches

Distinctive features and specifications



- PC and panel mount models
- Bushing Ø 6,35 (1/4) and 11,9 (15/32)
- UL and CECC approved

B

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
 - silver contacts (A-AD2) : 2A 250VAC - 4A 125VAC - 4A 30VDC
 - gold plated contacts (CD) : 100mA 30V
- Minimum load (AD2-CD 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 :

Contacts	Max. current/voltage rating	Number of cycles
A	2A 250VAC - 4A 125VAC - 4A 30VDC	50.000
AD2	2A 250VAC - 4A 125 VAC - 4A 30VDC (gold plating : 100mA 30VDC max.)	20.000
CD	100mA 30VDC	50.000
	Low level or mechanical life	150.000

MATERIALS

- Case : diallylphthalate (DAP)
- Actuator : brass, chrome plated
- Bushing : brass, nickel plated
- Housing : brass, nickel plated
- Contacts : **A** : silver
- AD2** : silver, gold plated
(2 micron gold)
- CD** : brass, gold plated
- Terminal seal : epoxy

Note : AD2 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 (.922 Ft.lb)
max. applied to nut
- Standard panel thickness : 2 mm
(.078) max.
- Total travel : 2 mm (.078)
- Operating temperature :
-40°C to +85°C

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Specifications

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/PREFERENTIAL LISTS



CECC 96401-001

QPL (Europe only)

MUAHAG

Designed to **MIL** specifications

Availability :

UL : all models with silver or gold plated silver contacts

CECC : consult factory for details of approved models.

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

Preferential lists do not appear on the switches.

B

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



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 mm (.314) across flats, 1 locking ring and 1 lockwasher.

Standard and special hardware available are presented in section I.



Packaging unit : 50 pieces.

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Overview

MODEL
STRUCTURE

13

SERIES

Terminals and bushing

- 2 Straight PC terminals, bushing \varnothing 6,35 (1/4)
- 4 Solder lugs, bushing \varnothing 6,35 (1/4) or 11,9 (15/32)
Right angle terminals, bushing \varnothing 6,35 (1/4)

No of poles

- 3 Single pole
- 4 Double pole

Electrical function

- 5 ON - MOM

Terminals

- Blank** Solder lugs or straight PC depending on model
- W** Right angle, horizontal mounting

B

OPTIONS

Contact materials

- A** Silver
- AD2** Silver, gold plated (2 micron gold)
- CD** Brass, gold plated

Finish

- Blank** Bright chrome finish
- G** Matt black finish on bushing, plunger and hardware

Special options

- Blank** No special requirement
- X640** Reinforced sealing by three O-rings
- X768** Bushing \varnothing 11,9 (15/32) + front panel sealing (double pole only)

Caps

- U900** \varnothing 5 (.196)
 - U1140** \varnothing 8 (.314)
 - U1720** \varnothing 9,4 (.370)
 - U480** \varnothing 10 (.393) std
 - U630** \varnothing 15 (.590)
 - U2430** Square, height 4 (.157)
 - U2020** Square, height 6 (.236)
- For models with \varnothing 4 (.157) plunger only.

Plungers

- Blank** Standard for \varnothing 6,35 (1/4) bushing
- 4** 4 mm (.157) long, for \varnothing 11,9 (15/32) bushing (X768)
- 9** 9 mm (.354) long, for \varnothing 11,9 (15/32) bushing (X768)

Sealing

- Blank** Epoxy sealed terminals standard
 - K** Front panel sealing by one O-ring and sealing washer
- Reinforced sealing, see X640 under "Special options".

Approvals

- UL**
 - 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

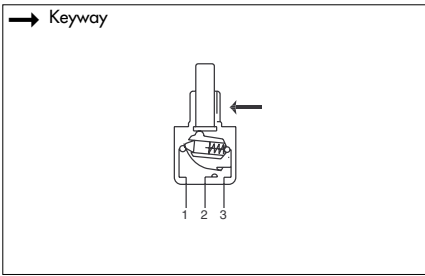
- On the following pages, you will find successively :
- model structure of switches
 - options in the same order as in above chart



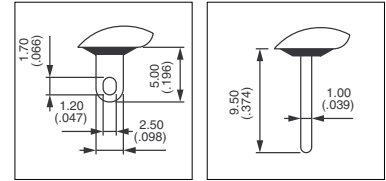
13000 series

Professional quick-break momentary pushbutton switches

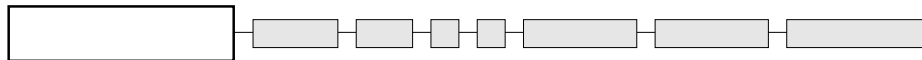
Solder lug terminals : 13400 - Straight PC terminals : 13200



- Threaded bushing $\varnothing 6,35 \text{ mm}$ (1/4)
- Epoxy sealed terminals standard



MODEL STRUCTURE



B

Solder lug terminals : 13400



Single pole
13435

Double pole
13445



ON

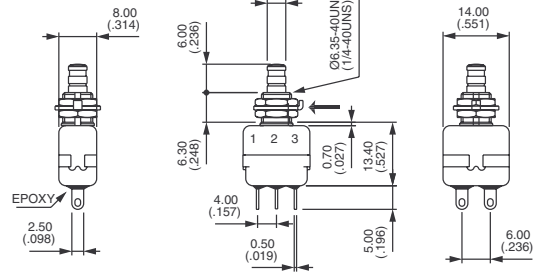


MOM

ON

MOM

→ Keyway



Straight PC terminals : 13200



Single pole
13235

Double pole
13245



ON

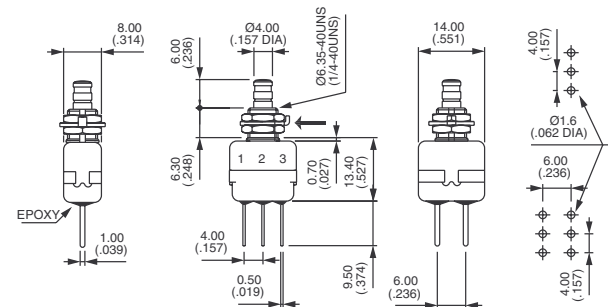


MOM

ON

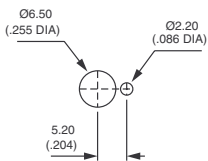
MOM

→ Keyway

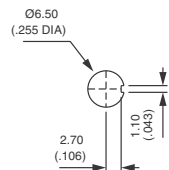


PANEL CUT-OUT

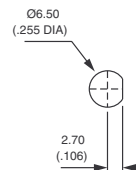
13400 - 13200



Standard



With K
sealing option



With X640
sealing option

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Right angle terminals : 13400W

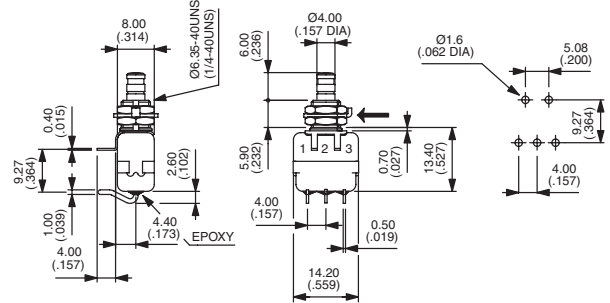
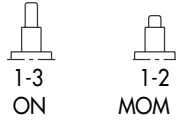


Right angle terminals - single pole

→ Keyway



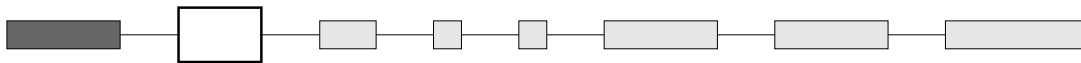
13435W



B

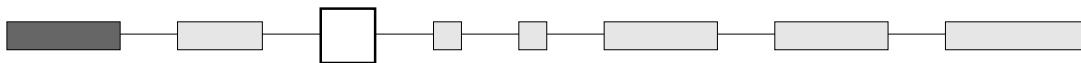
Panel cut-out, see previous page.

CONTACT MATERIALS



- A Silver
- AD2 Silver, gold plated (2 micron gold)
- CD Brass, gold plated

PLUNGER



Dash compulsory before plunger code.

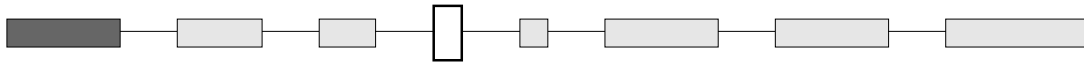
- Blank Standard plunger for $\varnothing 6,35$ (1/4) bushing
- 4 4 mm (.157) long plunger for $\varnothing 11,9$ (15/32) bushing (X768 option)
- 9 9 mm (.354) long plunger for $\varnothing 11,9$ (15/32) bushing (X768 option)



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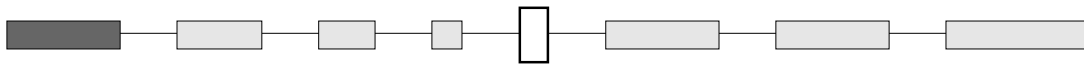
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FINISH



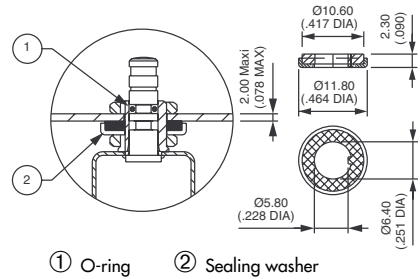
- Blank** Bright chrome finish
- G** Matt black finish on bushing, actuator and hardware

SEALING

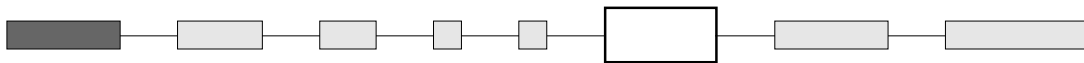


- K** Front panel sealing by one O-ring and sealing washer. Protects the switch against water and dust. Panel seal withstands 1 bar pressure and remains sealed even when switch is operated.

Reinforced sealing : see X640 under "Special options".



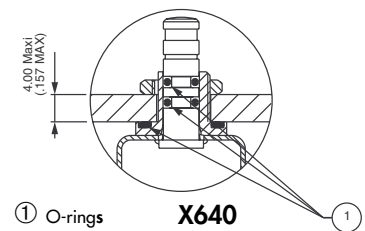
SPECIAL OPTIONS



- X640** Front panel sealing by three O-rings. Flatted bush for precise orientation. Protects the switch against water and dust. Panel seal withstands 1 bar pressure and remains sealed even when switch is operated.

Available on models with Ø 6,35 (1/4) bushing only.

- X935** C-ring on plunger for positive stop



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X768 Sealed switch with $\varnothing 11,9$ (15/32) flatted bushing. Solder lug terminals, double pole. Contact and finish options available.



With short plunger
13445 -4 X768

With long plunger
13445 -9 X768



ON

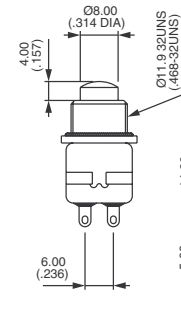


MOM

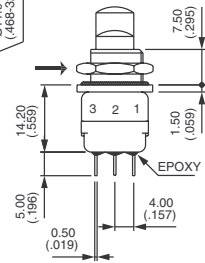
ON

MOM

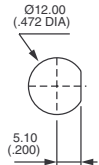
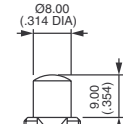
→ Flat



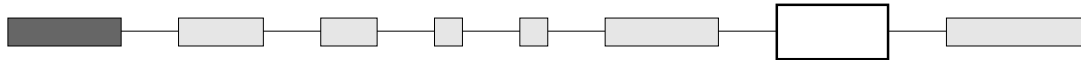
Short (-4)



Long (-9)



AGENCY APPROVALS



UL

CECC CECC 96401-001

Availability :

UL : all models with silver or gold plated silver contacts

CECC : consult factory for details of approved models.

Marking : to order switches marked UL or CECC, please complete above box with desired approval.

Blank : no agency approval required.

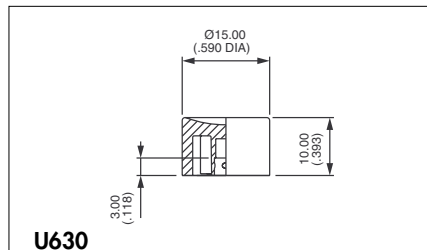
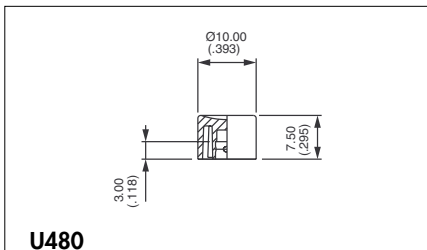
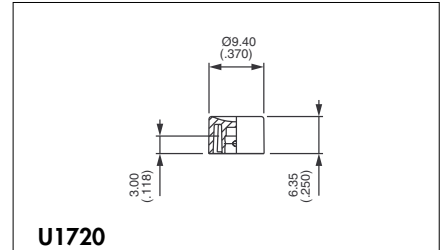
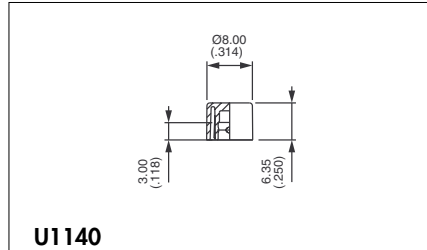
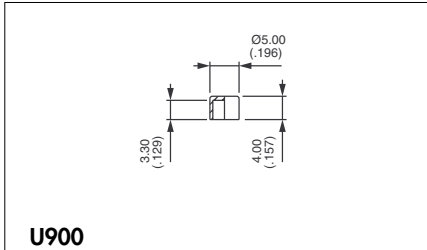
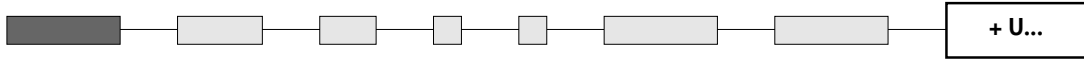
Preferential lists : see specifications.



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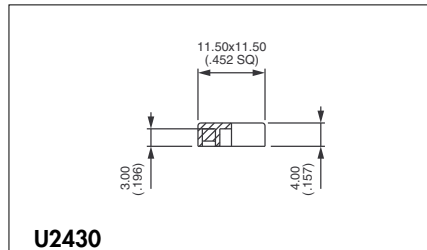
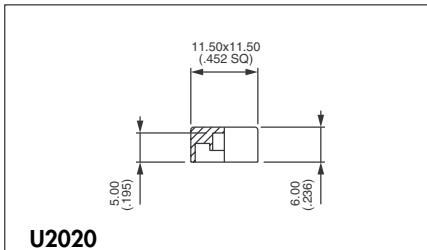
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CAPS



For models with $\varnothing 6,35$ (1/4) bushing only.

Cap colours	
Replace last "0" by number	
1	blue
1/4	dark blue
2	black
3	green
4	grey
5	yellow
6	red
7	ivory
7/1	white
9	orange

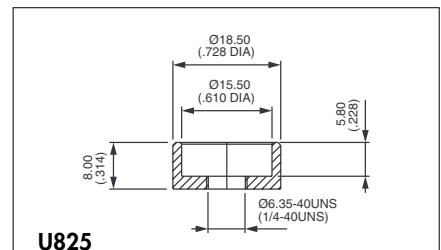
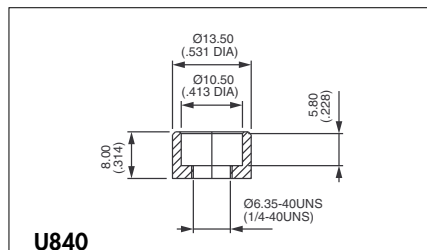
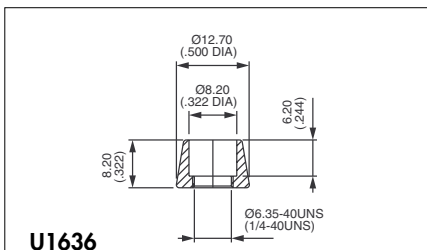


DRESS NUTS

Chrome plated



For models with $\varnothing 6,35$ (1/4) bushing only.



Dress nuts are to be ordered separately.

B