

5000 series

Toggle switches

Distinctive features

A



THE WIDEST RANGE IN MINIATURE SWITCHES

- ☐ 17 actuators including toggles, paddle levers and locking levers in different lengths.
- ☐ 5 contact materials from dry circuit to 6A 125VAC and high inrush up to 120A 2 ms.
- ☐ 8 functions including maintained and momentary versions.
- ☐ 1 to 4 pole configurations.
- ☐ 12 terminal types including 9 for PC board mounting. Other types include quick-connect and wire-wrap.
- ☐ 6 bushing styles from 6 (.236) plain to 11,9 (15/32) threaded.
- ☐ 3 types of finish including military black.
- ☐ 4 approvals (UL - CSA - VDE - CECC) and 3 listings.
- ☐ 4 types of sealing for terminal or front panel requirements.
- ☐ Numerous accessories available for actuator and bushing options.

ELECTRICAL SPECIFICATIONS

- Current/voltage rating with resistive load :

Contact	Maximum	Minimum	Level*
Silver (A)	3A 250VAC - 6A 125VAC - 4A 30VDC	50mA 10VDC	III and IV
Silver, gold plated (AD)	3A 250VAC - 6A 125 VAC - 4A 30VDC Gold plating withstands up to 100mA 30VDC	10mA 50mV 10 μ A 5V	I to IV
Brass, gold plated (CD)	0,4 VA at 20VAC or DC	10mA 50mV 10 μ A 5V	I and II

- For inductive, lamp or capacitive load, consult factory.
- Initial contact resistance : 10 m Ω max.
- Insulation resistance : 1.000 M Ω min. at 500VDC
- Dielectric strength :
 - 1.000 Vrms 50 Hz min. between terminals
 - 1.500 Vrms 50 Hz min. between poles
 - 1.500 Vrms 50 Hz min. between terminals and frame
- Contact bounce : 2 ms max.
- Electrical life at full load :
 - 50.000 cycles for single and double pole
 - 40.000 cycles for 3 pole
 - 30.000 cycles for 4 pole
- Low level or mechanical life : 100.000 cycles

* For details, see Technical Information, end of catalogue.

MATERIALS

- Case : diallylphthalate (DAP) or high temperature plastic material (UL94-V0)
- Actuator : brass, nickel plated
- Paddles : UL94HB polyamide
- Lever caps : vinyl
- Bushing : brass, nickel plated
- Housing : stainless steel or steel tin plated
- Contacts
 - A** : silver
 - AD** : silver, gold plated
 - CD** : brass, gold plated
 - X814** : for peak currents, see "Special options".
- Terminal seal : epoxy

GENERAL SPECIFICATIONS

- Torque : 1,25 Nm (.922 Ft.lb) max. applied to nut
- Panel thickness : 2,5 mm (.098) with 2 nuts - 4 mm (.157) with 1 nut
- Operating temperature : -40°C to +85°C

AGENCY APPROVALS/PREFERENTIAL LIST



EN 61058-1



CECC 96201-007

For VDE, refer to 55000 series.

NATO

Availability : consult factory for details of approved models.

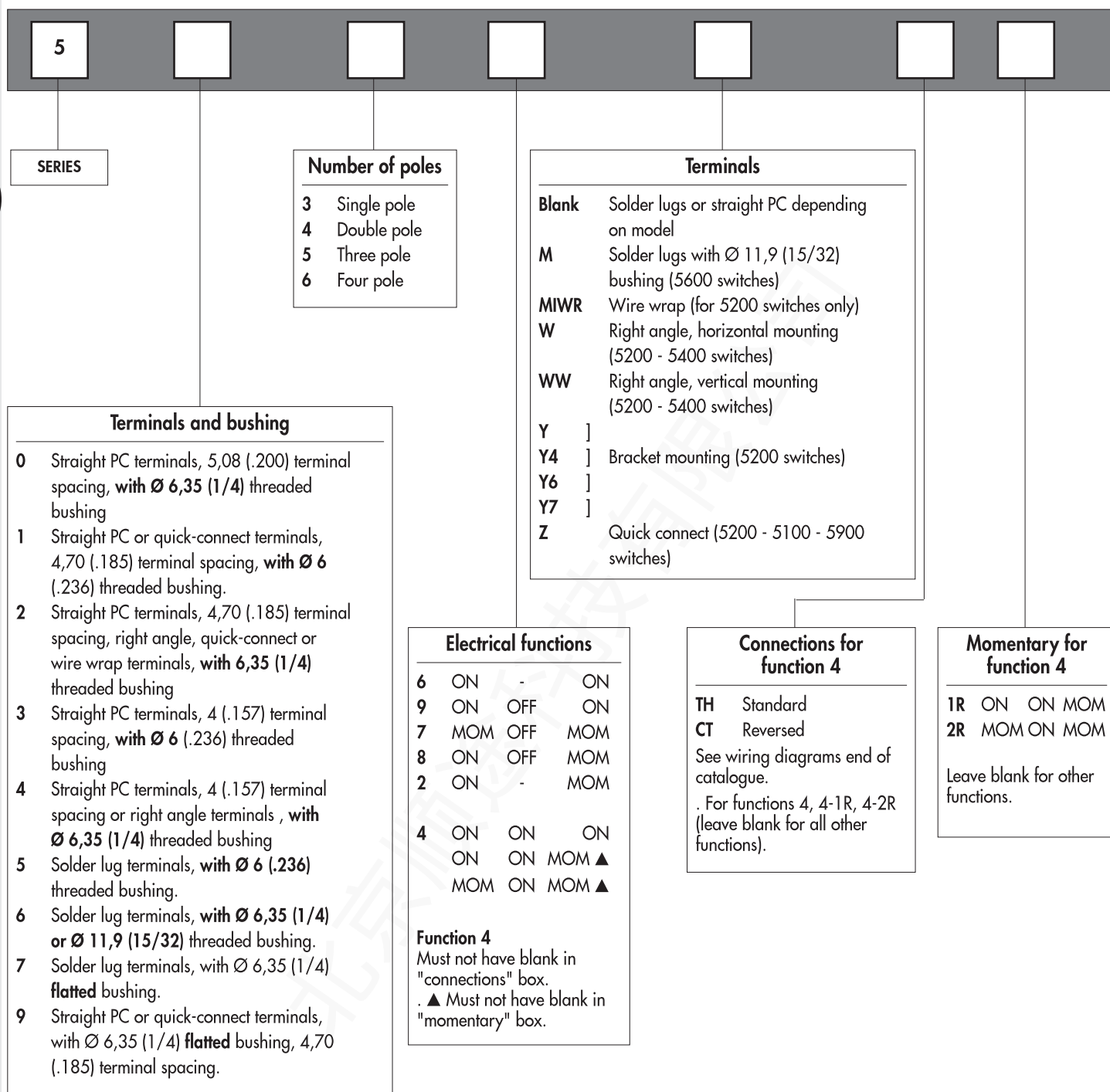
Marking : to order switches marked UL, CSA or CECC, complete appropriate box of ordering format. The preferential list does not appear on the switches.

5000 series

Toggle switches

Overview

MODEL
STRUCTURE



ABOUT THIS SERIES

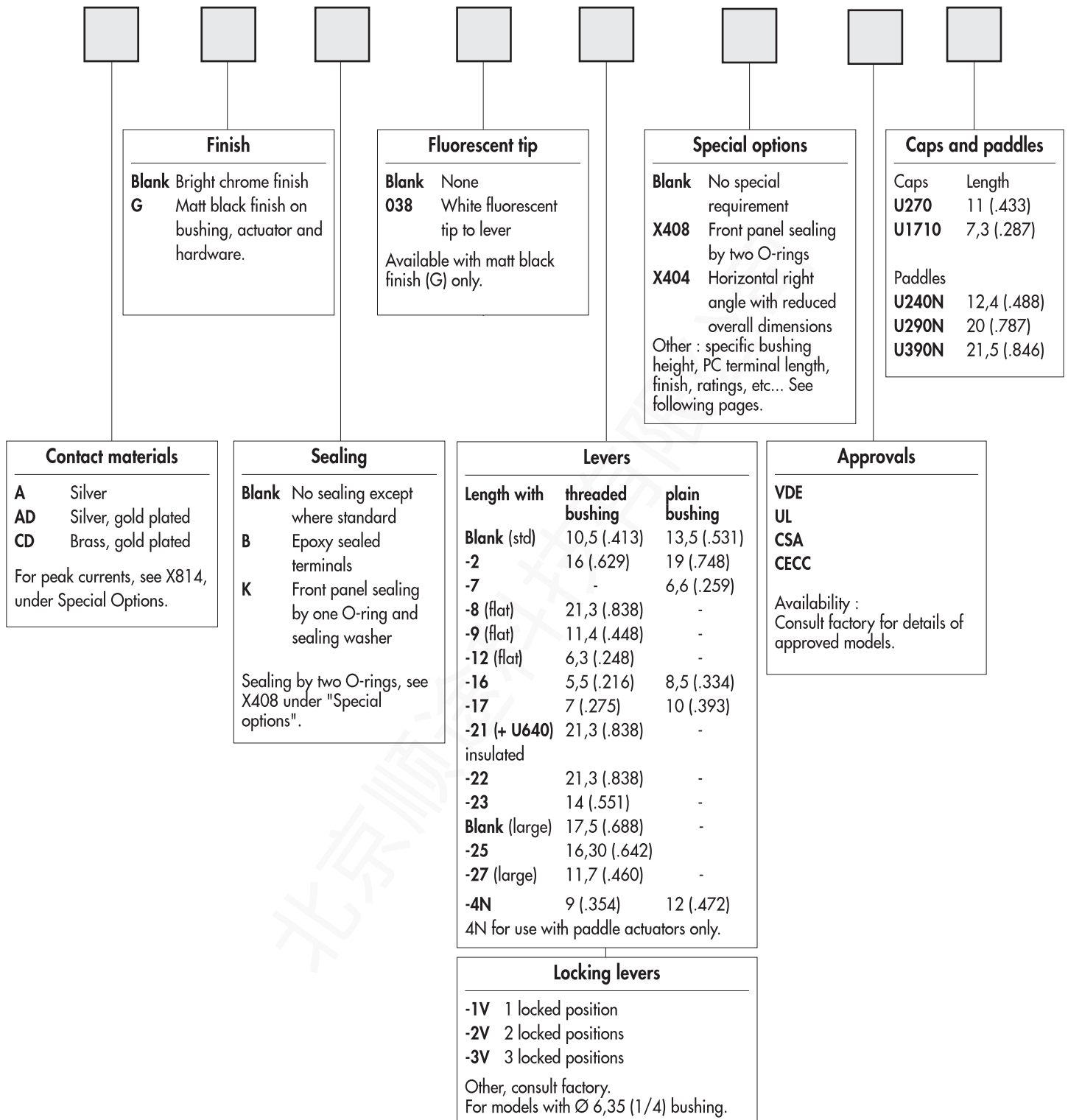
On the following pages, you will find successively :

- model structure of switches with threaded bushing
- model structure of switches with plain bushing
- options in the same order as in above chart

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



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



Sealing boots are available. They are presented in section H.



Mounting accessories : standard hardware supplied with all models with Ø 6,35 (1/4) or Ø 6 (.236) threaded bushing : 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 : 25 pieces or 50 pieces depending on models.

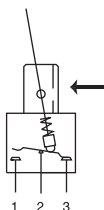
5000 series

Toggle switches - solder lug terminals

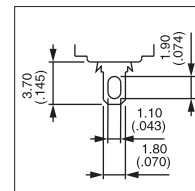
Threaded bushing $\varnothing 6,35$ (1/4) : 5600

MODEL
STRUCTURE

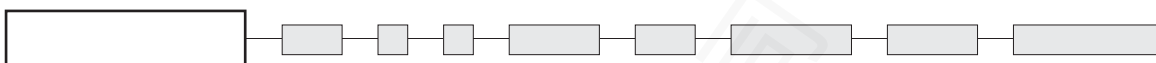
→ Keyway



• 1, 2, 3 and 4 pole configurations



MODEL
STRUCTURE



Shown with standard lever

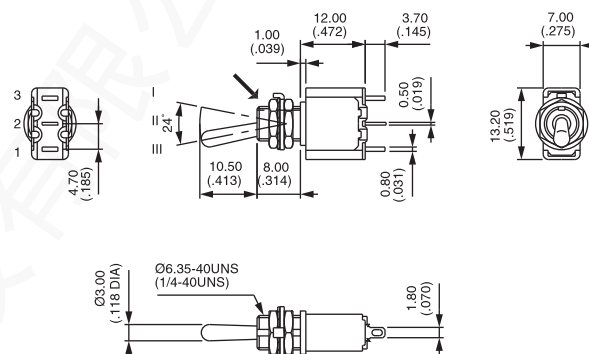
Single pole



5636
5639
5637
5638
5632

III	II	I
2-3		1-2
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM

→ Keyway



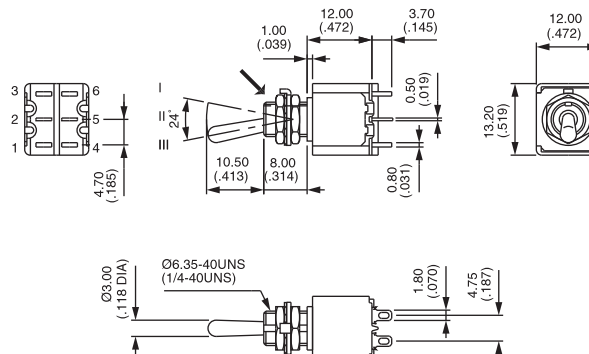
Double pole



5646
5649
5647
5648
5642
5644*
5644 1R*
5644 2R*

III	II	I
2-3		1-2
5-6		4-5
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM
ON	ON	ON
ON	ON	MOM
MOM	ON	MOM

→ Keyway



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

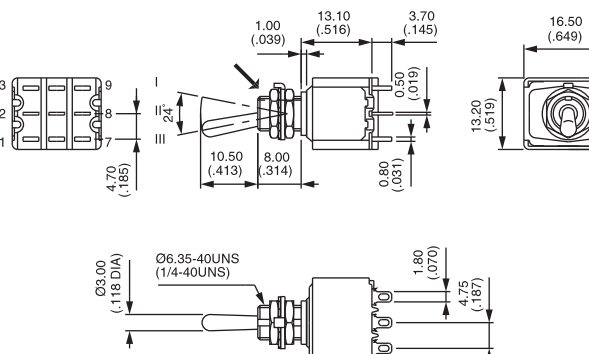
Three pole



5656
5659
5657
5658
5652

III	II	I
2-3		1-2
5-6		4-5
8-9		7-8
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM

→ Keyway





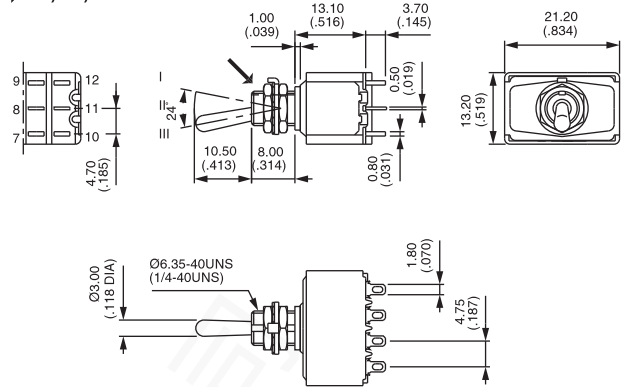
Four pole



5666
5669
5667
5668
5662
5664*
5664 1R*
5664 2R*

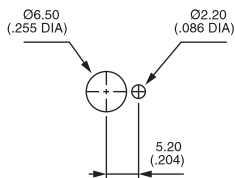
III	II	I
2-3		1-2
5-6		4-5
8-9		7-8
11-12		10-11
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM
ON	ON	ON
ON	ON	MOM
MOM	ON	MOM

→ Keyway

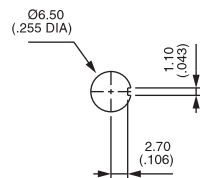


*Function 4 : DP in 4P case - specify CT or TH connections, see end of catalogue.

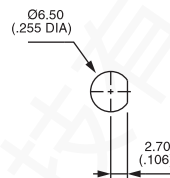
PANEL CUT-OUT



Standard



With K
sealing option



With X408
sealing option

5000 series

Toggle switches - solder lug terminals

MODEL
STRUCTURE

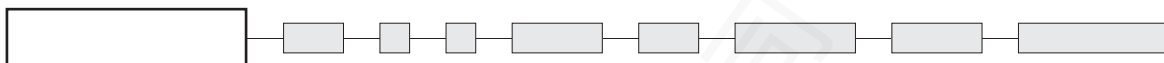
A

Diagram as per 5600 model

5700 models

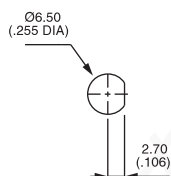
- Flatted bushing Ø 6,35 mm (1/4)
- 1, 2, 3 and 4 pole configurations

MODEL
STRUCTURE



For model structure numbers, refer to 5600 models and replace 6 with 7.

PANEL CUT-OUT



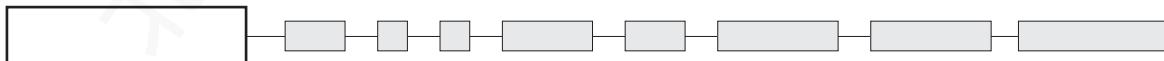
Standard or
with K sealing option

5500 models

- Threaded bushing Ø 6 mm x 0.75 SI (.236 x 0.75 IS)
- 1, 2, 3 and 4 pole configurations

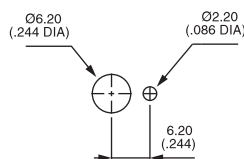
Diagram as per 5600 model

MODEL
STRUCTURE

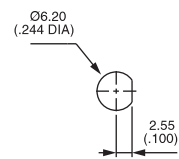


For model structure numbers, refer to 5600 models and replace 6 with 5.

PANEL CUT-OUT



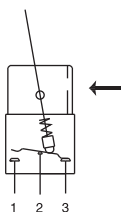
Standard



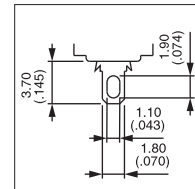
With X408 sealing option



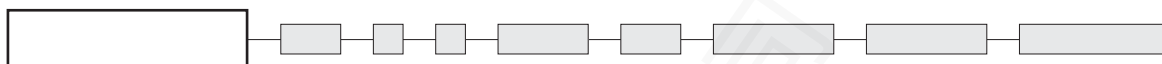
→ Keyway



- 1, 2, 3 and 4 pole configurations
- Supplied with 2 hex nuts and 1 locking ring
- Panel thickness up to 6 mm (.236)



MODEL
STRUCTURE



Shown with standard lever

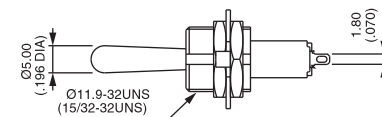
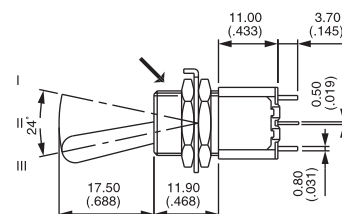
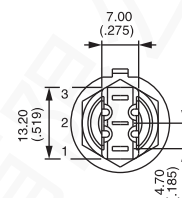
Single pole



5636M
5639M
5637M
5638M
5632M

III	II	I
2-3		1-2
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM

→ Keyway



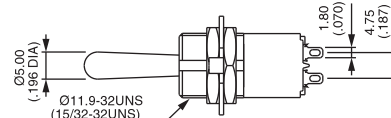
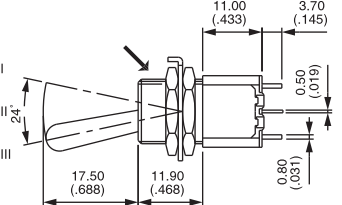
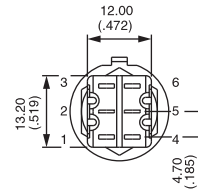
Double pole



5646M
5649M
5647M
5648M
5642M
5644M*
5644M 1R*
5644M 2R*

III	II	I
2-3		1-2
5-6		4-5
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM
ON	ON	ON
ON	ON	MOM
MOM	ON	MOM

→ Keyway



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

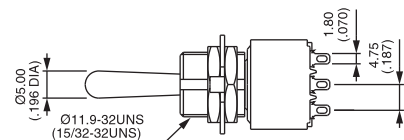
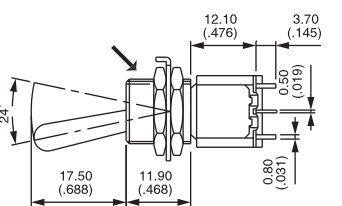
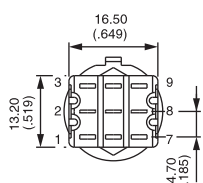
Three pole



5656M
5659M
5657M
5658M
5652M

III	II	I
2-3		1-2
5-6		4-5
8-9		7-8
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM

→ Keyway



5000 series

Toggle switches - solder lug terminals

Threaded bushing Ø 11,9 (15/32) : 5600M

MODEL
STRUCTURE

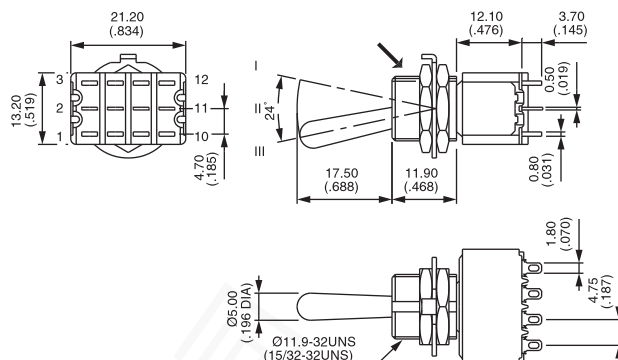
Four pole



5666M
5669M
5667M
5668M
5662M
5664M*
5664M 1R*
5664M 2R*

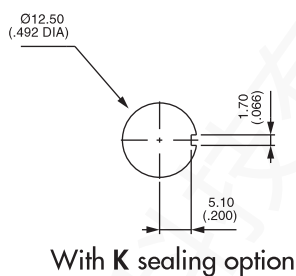
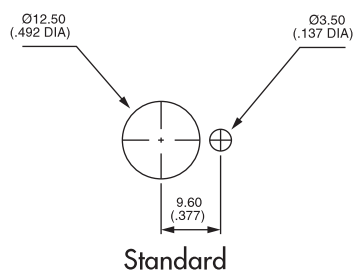
III	II	I
2-3		1-2
5-6		4-5
8-9		7-8
11-12		10-11
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM
ON	ON	ON
ON	ON	MOM
MOM	ON	MOM

→ Keyway

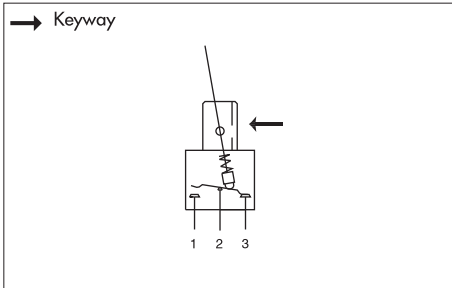


*Function 4 : DP in 4P case - specify CT or TH connections, see end of catalogue.

PANEL CUT-OUT



OTHER : M bushing can be combined with other types such as : 5200, Z, MIWR... Consult factory.

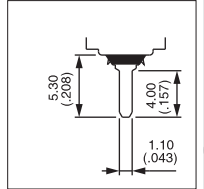


- **Terminal spacing 4,7 mm (.185)**
- 1, 2, 3 and 4 pole configurations
- Epoxy sealed terminals standard

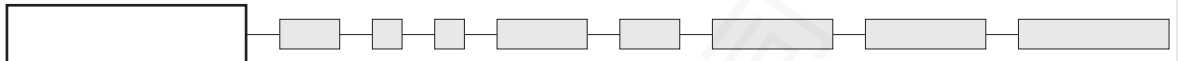
For new projects, we recommend switches with support bracket (option Y) which holds the switch securely on the PCB.

Other terminal lengths presented under "Special options".

Also available with plain bushing, see "Special options" X371



MODEL STRUCTURE



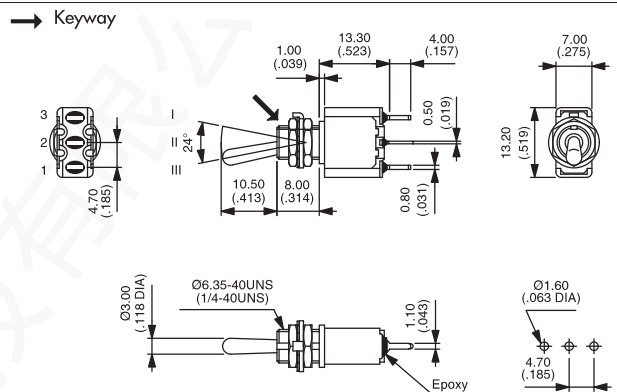
Shown with standard lever

Single pole



5236 B
5239 B
5237 B
5238 B
5232 B

III	II	I
2-3		1-2
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM

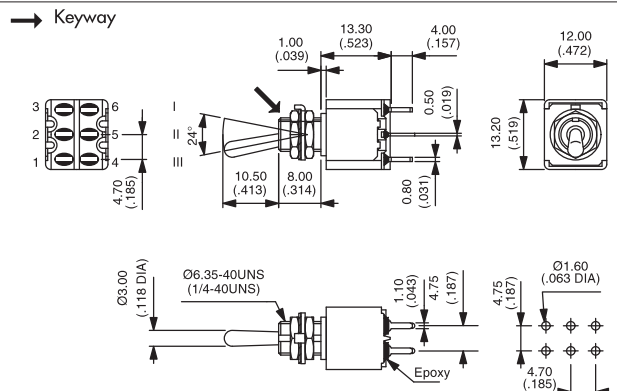


Double pole



5246 B
5249 B
5247 B
5248 B
5242 B
5244 B
5244 1
5244 2

III	II	I
2-3		1-2
5-6		4-5
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM
ON	ON	ON
ON	ON	MOM
MOM	ON	MOM



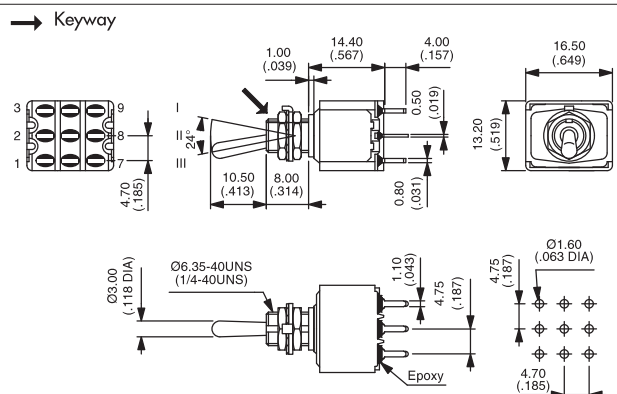
*Function 4 : SP in DP case - specify CT or TH connections, see end of catalogue.

Three pole



5256 B
5259 B
5257 B
5258 B
5252 B

III	II	I
2-3		1-2
5-6		4-5
8-9		7-8
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM



5000 series

Toggle switches - straight PC terminals

Threaded bushing $\varnothing 6,35$ (1/4) : 5200 - 5000

MODEL
STRUCTURE

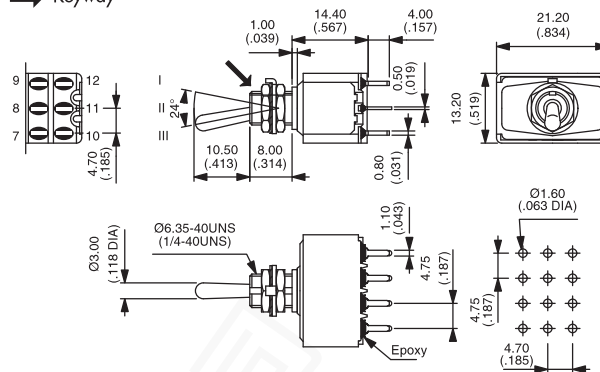
Four pole



5266 B
5269 B
5267 B
5268 B
5262 B
5264 B*
5264 1R B*
5264 2R B*

III	II	I
2-3		1-2
5-6		4-5
8-9		7-8
11-12		10-11
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM
ON	ON	ON
ON	ON	MOM
MOM	ON	MOM

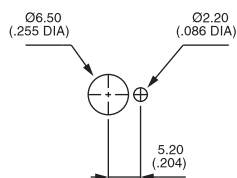
→ Keyway



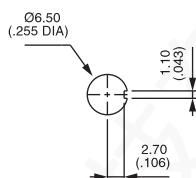
*Function 4 : DP in 4P case - specify CT or TH connections, see end of catalogue.

PANEL CUT-OUT

5200 - 5000 - 5400



Standard

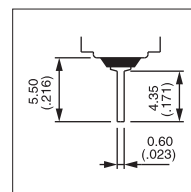


With K sealing option

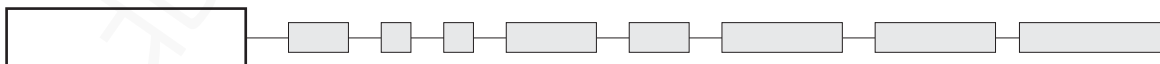
5000 models

- Terminal spacing 5,08 mm (.200)
- Epoxy sealed terminals standard
- 1 and 2 pole configurations

Diagram as per 5200 model



MODEL
STRUCTURE



Shown with standard lever

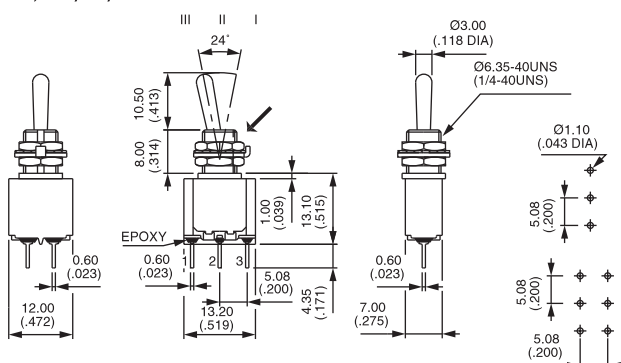
Terminal spacing 5,08 (.200) - single and double pole

→ Keyway



Single pole Double pole
5036 5046
5039 5049
5037 5047
5038 5048
5032 5042
5044*
5044 1R*
5044 2R*

III	II	I
2-3		1-2
5-6		4-5
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM
ON	ON	ON
ON	ON	MOM
MOM	ON	MOM



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

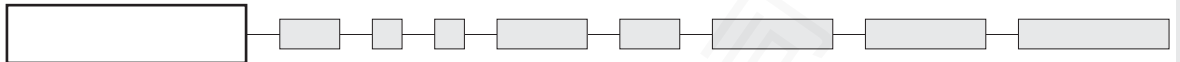


5400 models

- Threaded bushing Ø 6,35 mm (1/4)
- Terminal spacing 4 mm (.157)
- 1, 2, 3 and 4 pole configurations

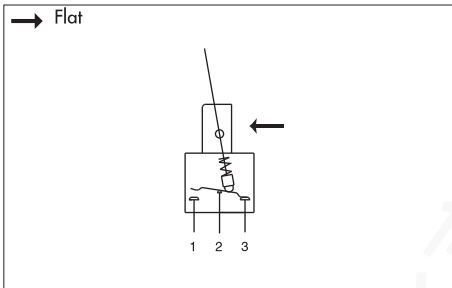
Diagram, as per 5200 model

MODEL STRUCTURE



For model structure numbers, refer to 5200 models and replace 2 with 4.

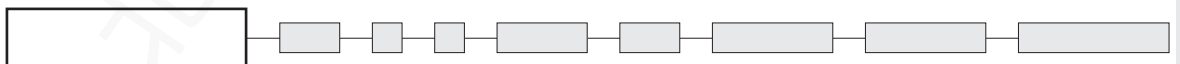
Panel cut-out, see 5200.



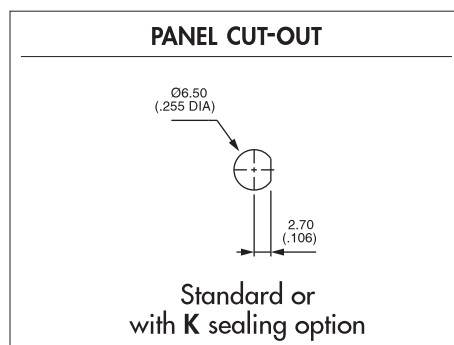
5900 models

- Flatted bushing Ø 6,35 mm (1/4)
- Terminal spacing 4,7 mm (.185)
- 1, 2, 3 and 4 pole configurations

MODEL STRUCTURE



For model structure numbers, refer to 5200 models and replace 2 with 9.



5000 series

Toggle switches - straight PC terminals

MODEL
STRUCTURE

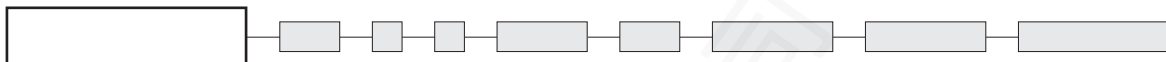
A

Diagram, as per 5200 model

5100 models

- Threaded bushing Ø 6 mm x 0.75 SI (.236 x 0.75 IS)
- Terminal spacing 4,7 mm (.185)
- 1, 2, 3 and 4 pole configurations

MODEL
STRUCTURE



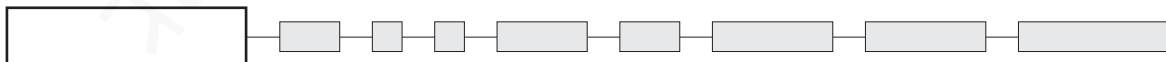
For model structure numbers, refer to 5200 models and replace 2 with 1.
Panel cut-out, see below.

5300 models

- Threaded bushing Ø 6 mm x 0.75 SI (.236 x 0.75 IS)
- Terminal spacing 4 mm (.157)
- 1, 2, 3 and 4 pole configurations

Diagram, as per 5200 model

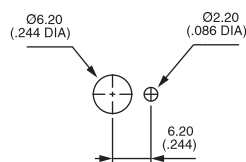
MODEL
STRUCTURE



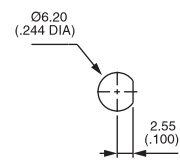
For model structure numbers, refer to 5200 models and replace 2 with 3.

PANEL CUT-OUT

5100 - 5300

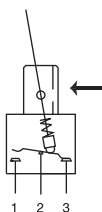


Standard

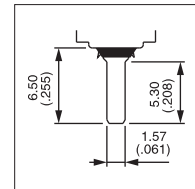


With X408 sealing option

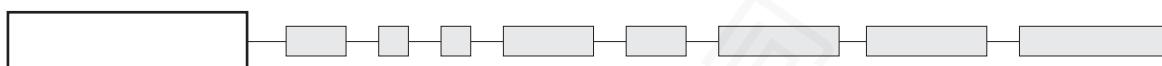
→ Keyway



- Terminal spacing 4,7 mm (.185)
- Epoxy sealed terminals standard
- 1 and 2 pole configurations



MODEL
STRUCTURE



Shown with standard lever

Single pole

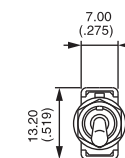
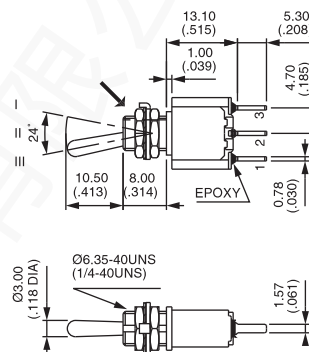


5236Z
5239Z
5237Z
5238Z
5232Z

III II I
2-3 1-2

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

→ Keyway



Double pole

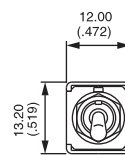
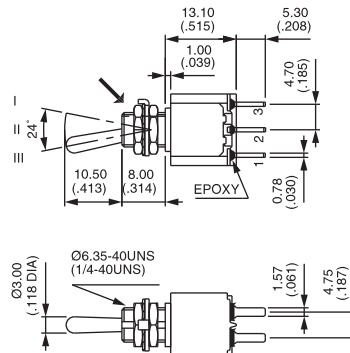


5246Z
5249Z
5247Z
5248Z
5242Z
5244Z*
5244Z 1R*
5244Z 2R*

III II I
2-3 1-2
5-6 4-5

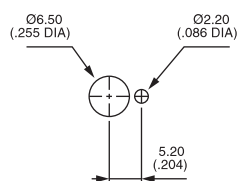
ON - ON
ON OFF ON
MOM OFF MOM
ON OFF MOM
ON - MOM
ON ON ON
MOM ON MOM

→ Keyway

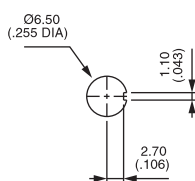


*Function 4 : SP in DP case - specify CT or TH connections, see end of catalogue.

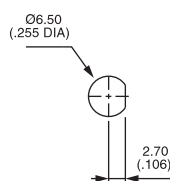
PANEL CUT-OUT



Standard



With K
sealing option



With X408
sealing option

5000 series

Toggle switches - quick-connect terminals

MODEL
STRUCTURE

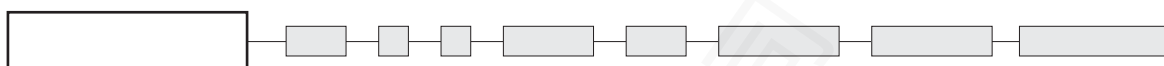
A

Diagram, as per 5900 model

5900Z models

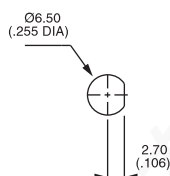
- Flatted bushing $\varnothing 6,35$ mm (1/4)
- Terminal spacing 4,7 mm (.185)
- Epoxy sealed terminals standard
- 1 and 2 pole configurations

MODEL
STRUCTURE



For model structure numbers, refer to 5200Z models and replace 2 with 9.

PANEL CUT-OUT



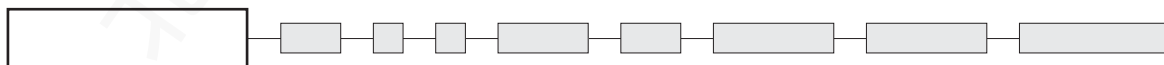
Standard or
with K sealing option

5100Z models

- Threaded bushing $\varnothing 6$ mm x 0.75 SI (.236 x 0.75 IS)
- Terminal spacing 4,7 mm (.185)
- Epoxy sealed terminals standard
- 1 and 2 pole configurations

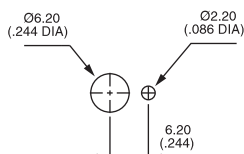
Diagram, as per 5200 model

MODEL
STRUCTURE

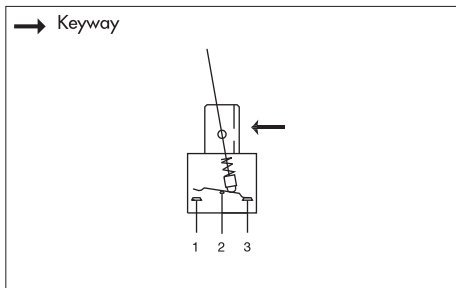


For model structure numbers, refer to 5200Z models and replace 2 with 1.

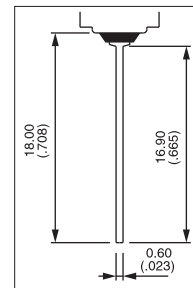
PANEL CUT-OUT



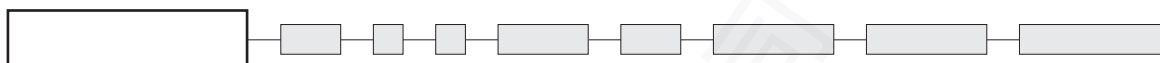
Standard



- Terminal spacing 5,08 mm (.200)
- Epoxy sealed terminals standard
- 1 and 2 pole configurations
- Can also be used as extended PCB terminals



MODEL
STRUCTURE



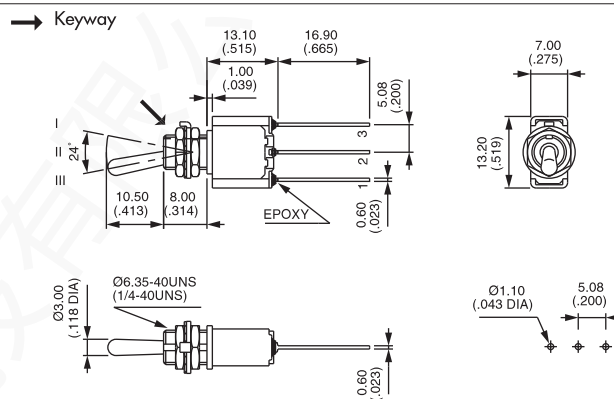
Shown with standard lever

Terminal spacing 5,08 (.200) - single pole



5236MIWR
5239MIWR
5237MIWR
5238MIWR
5232MIWR

III	II	I
2-3		1-2
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM

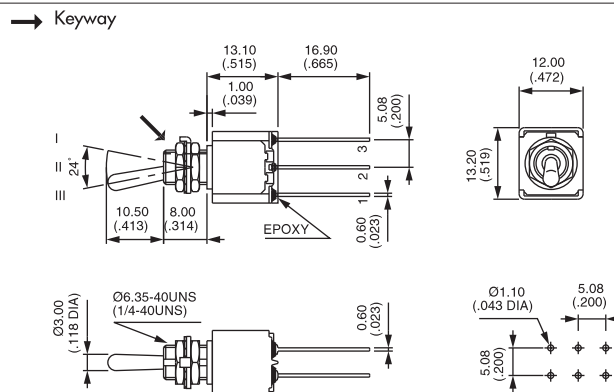


Terminal spacing 5,08 (.200) - double pole



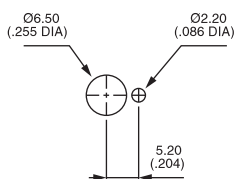
5246MIWR
5249MIWR
5247MIWR
5248MIWR
5242MIWR
5244 1R MIWR*
5244 1R MIWR*
5244 2R MIWR*

III	II	I
2-3		1-2
5-6		4-5
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM
ON	ON	ON
ON	ON	MOM
MOM	ON	MOM

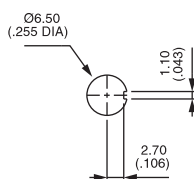


*Function 4 : SP in DP case - specify CT or TH connections, see end of catalogue.

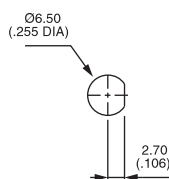
PANEL CUT-OUT



Standard



With K
sealing option



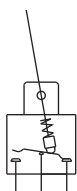
With X408
sealing option

5000 series

Toggle switches - plain bushing

Right angle terminals - horizontal : 5200W

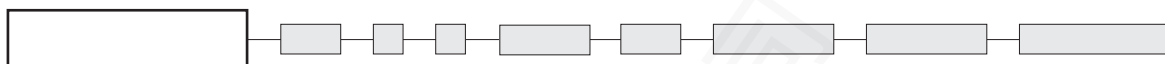
MODEL
STRUCTURE



- Terminal spacing 4,7 mm (.185)
- 1, 2 and 3 pole configurations

Special switch **5200WX404** with reduced overall dimensions is presented under "Special options".

MODEL
STRUCTURE



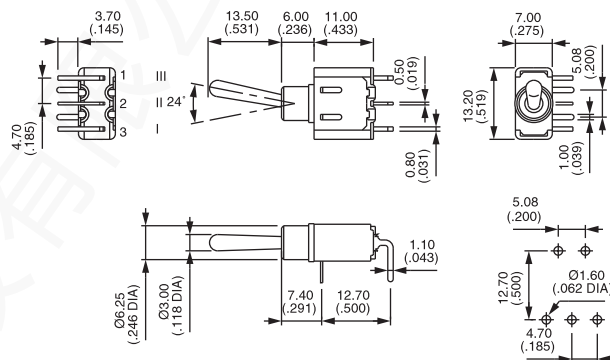
Shown with standard lever

Single pole



5236W
5239W
5237W
5238W
5232W

III	II	I
2-3		1-2
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM

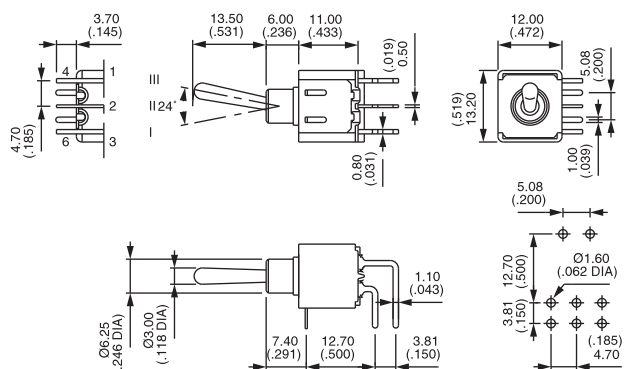


Double pole



5246W
5249W
5247W
5248W
5242W
5244W*
5244W 1R*
5244W 2R*

III	II	I
2-3		1-2
5-6		4-5
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM
ON	ON	ON
ON	ON	MOM
MOM	ON	MOM



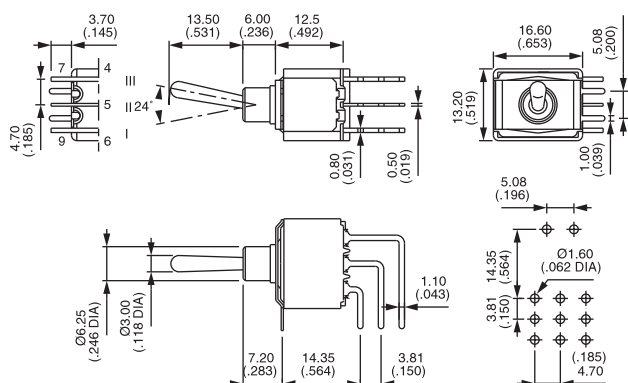
*Function 4 : SP in DP case - specify CT or TH connections, see end of catalogue.

Three pole



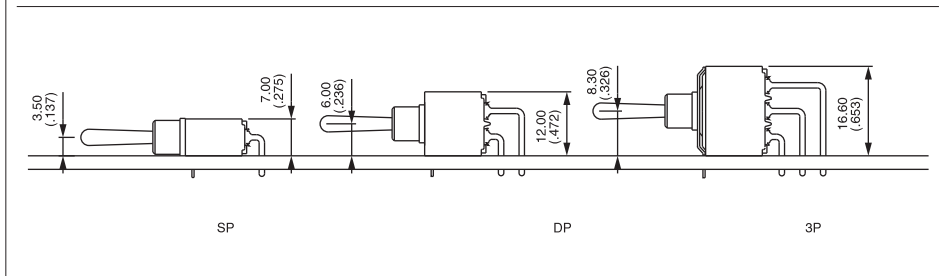
5256W
5259W
5257W
5258W
5252W

III	II	I
2-3		1-2
5-6		4-5
8-9		7-8
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM





PCB MOUNTING FOR 5200W



5400W models

- Terminal spacing 4 mm (.157)
- 1 and 2 pole configurations

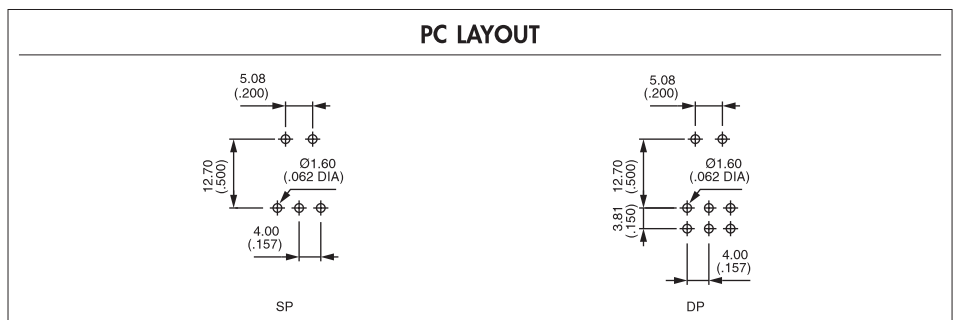
Diagram, as per 5200W model

MODEL STRUCTURE



For model structure numbers, refer to 5200W single and double pole and replace 2 with 4.

PC LAYOUT

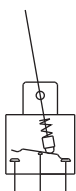


5000 series

Toggle switches - plain bushing

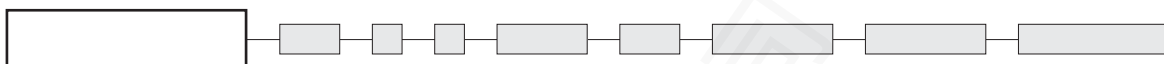
Right angle terminals - vertical : 5200WW

MODEL
STRUCTURE



- Pin spacing 3,81 mm (.150)
- 1, 2, 3 and 4 pole configurations

MODEL
STRUCTURE



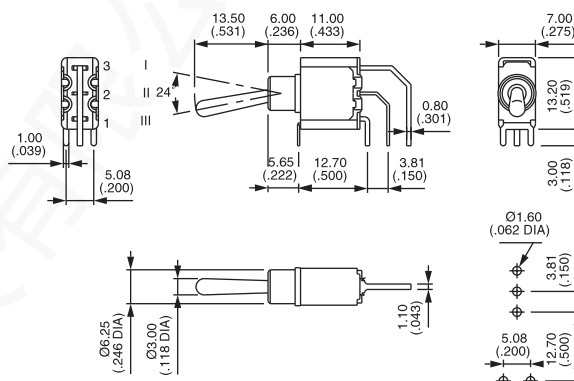
Shown with standard lever

Single pole



5236WW
5239WW
5237WW
5238WW**
5232WW**

III	II	I
2-3		1-2
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM

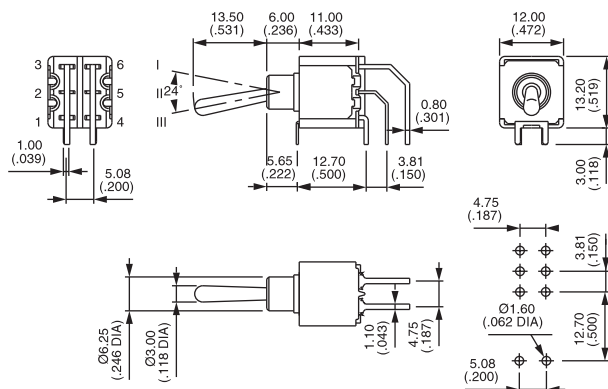


Double pole



5246WW
5249WW
5247WW
5248WW**
5242WW**
5244WW*
5244WW 1R*
5244WW 2R*

III	II	I
2-3		1-2
5-6		4-5
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM
ON	ON	ON
ON	ON	MOM
MOM	ON	MOM

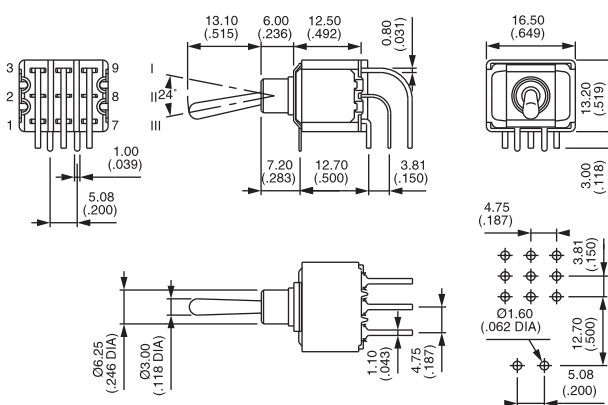


Three pole



5256WW
5259WW
5257WW
5258WW**
5252WW**

III	II	I
2-3		1-2
5-6		4-5
8-9		7-8
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM



* and ** : see notes next page.

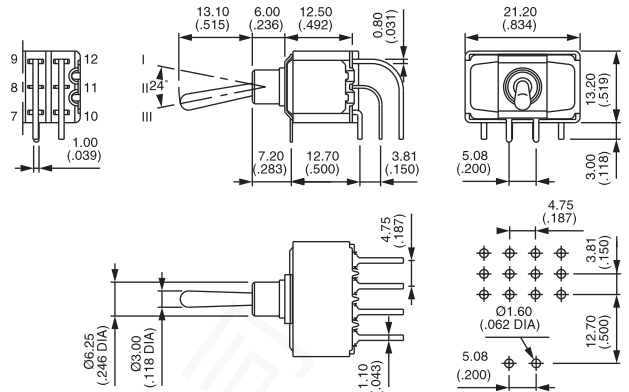


Four pole



5266WW
5269WW
5267WW
5268WW**
5262WW**
5264WW*
5264WW 1R*
5264WW 2R*

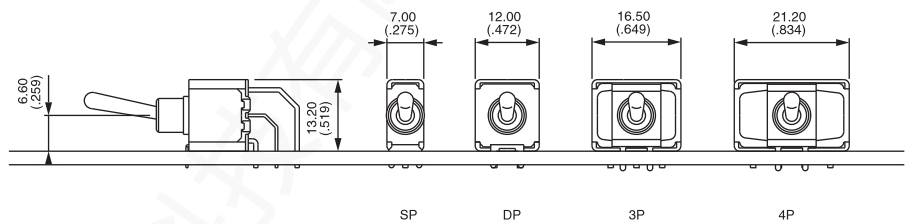
III	II	I
2-3		1-2
5-6		4-5
8-9		7-8
11-12		10-11
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM
ON	ON	ON
ON	ON	MOM
MOM	ON	MOM



* Function 4 : SP in DP case, DP in 4P case - specify CT or TH connections, see end of catalogue.

** Functions 2 and 8 : reversed connection available, consult factory.

PCB MOUNTING

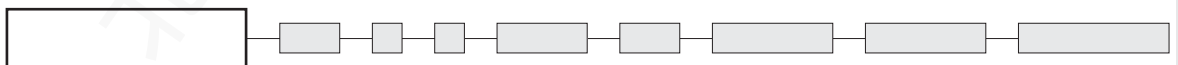


5400WW models

- Pin spacing 2,54 mm (.100)
- 1, 2, 3 and 4 pole configurations

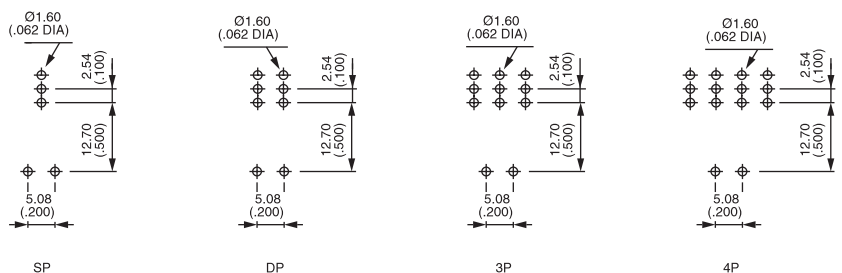
Diagram as per 5200WW model

MODEL STRUCTURE



For model structure numbers, refer to **5200WW** models and replace 2 with 4.

PC LAYOUT

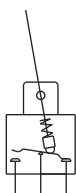


5000 series

Toggle switches - plain bushing

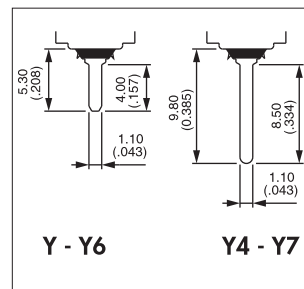
Straight PC terminals - bracket mounting : 5200Y

MODEL
STRUCTURE

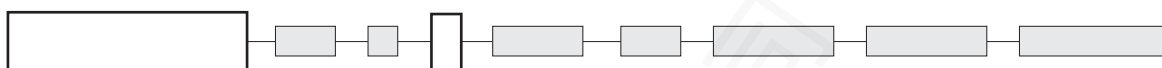


Brackets reduce mechanical stress on solder joints and increase resistance to vibrations.
Bracket material : tin plated steel.

- Epoxy sealed terminals standard
- 1 and 2 pole configurations



MODEL
STRUCTURE



Shown with standard lever

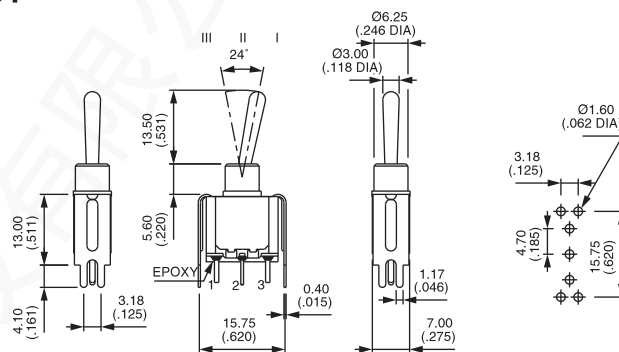
Short bracket - width 15,75 (.620) - single pole : 5230Y



5236Y B
5239Y B
5237Y B
5238Y B
5232Y B

III II I
2-3 1-2

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



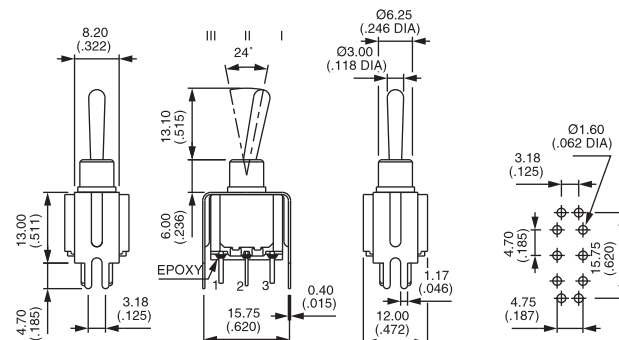
Short bracket - width 15,75 (.620) - double pole : 5240Y



5246Y B
5249Y B
5247Y B
5248Y B
5242Y B
5244Y B*
5244Y 1R B*
5244Y 2R B*

III II I
2-3 1-2
5-6 4-5

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



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

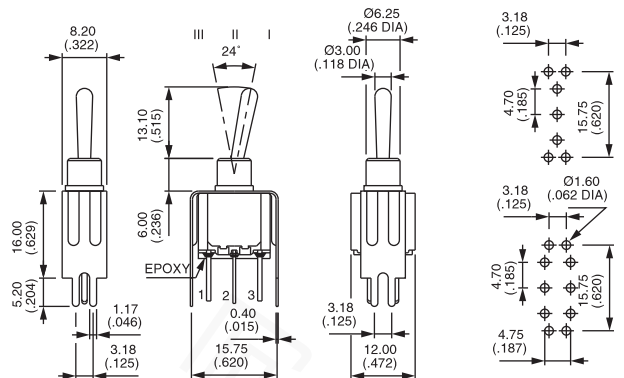


Tall bracket - width 15,75 (.620) : 5200Y4



Single pole Double pole

		III	II	I
5236Y4 B	5246Y4 B	2-3		1-2
5239Y4 B	5249Y4 B	5-6		4-5
5237Y4 B	5247Y4 B		ON	ON
5238Y4 B	5248Y4 B		OFF	OFF
5232Y4 B	5242Y4 B		MOM	MOM
	5244Y4 B*		ON	ON
	5244Y4 1R B*		ON	MOM
	5244Y4 2R B*		MOM	MOM

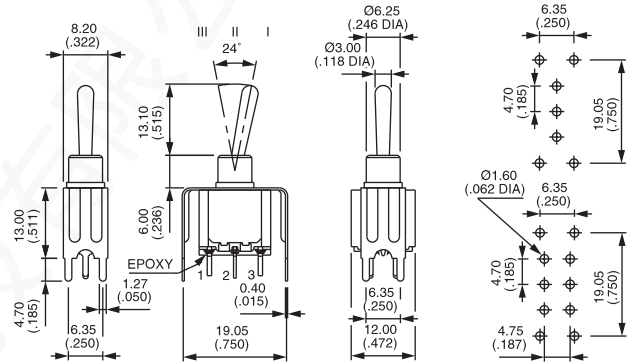


Short bracket - width 19,05 (.750) : 5200Y6



Single pole Double pole

		III	II	I
5236Y6 B	5246Y6 B	2-3		1-2
5239Y6 B	5249Y6 B	5-6		4-5
5237Y6 B	5247Y6 B		ON	ON
5238Y6 B	5248Y6 B		OFF	OFF
5232Y6 B	5242Y6 B		MOM	MOM
	5244Y6 B*		ON	ON
	5244Y6 1R B*		ON	MOM
	5244Y6 2R B*		MOM	MOM

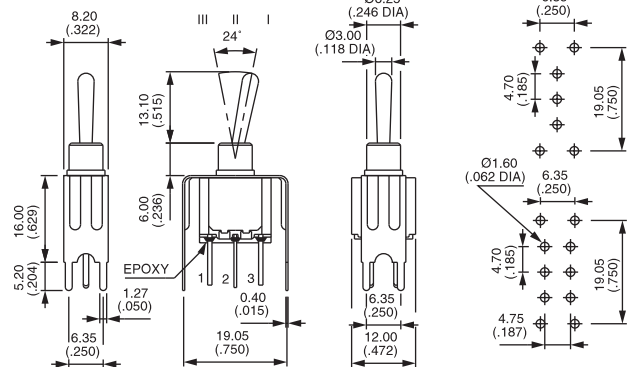


Tall bracket - width 19,05 (.750) : 5200Y7



Single pole Double pole

		III	II	I
5236Y7 B	5246Y7 B	2-3		1-2
5239Y7 B	5249Y7 B	5-6		4-5
5237Y7 B	5247Y7 B		ON	ON
5238Y7 B	5248Y7 B		OFF	OFF
5232Y7 B	5242Y7 B		MOM	MOM
	5244Y7 B*		ON	ON
	5244Y7 1R B*		ON	MOM
	5244Y7 2R B*		MOM	MOM



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

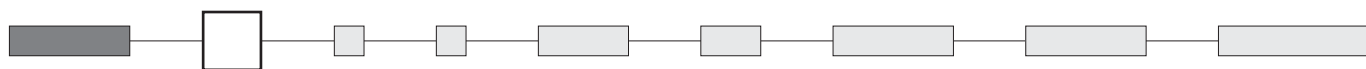
5000 series

Toggle switches

OPTIONS

• • •

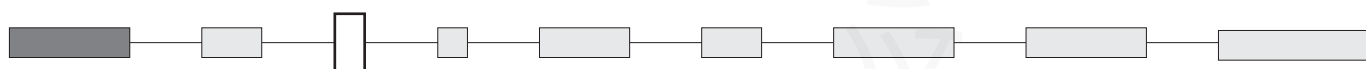
CONTACT MATERIALS



- A Silver
- AD Silver, gold plated
- CD Brass, gold plated

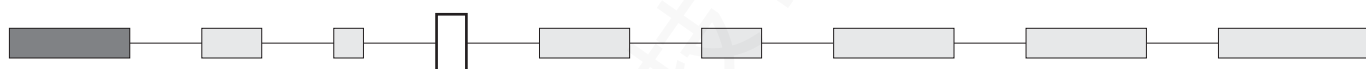
Special contacts for peak currents : see X814, under "Special Options".

FINISH



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

SEALING



- Blank
 - For 5000 - 5200Z and 5200MIWR models : epoxy sealed terminals standard
 - Other models : no sealing required

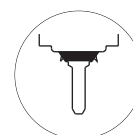
- B Epoxy sealed terminals

- 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.



Available on models with $\varnothing 6,35$ (1/4) or 11,9 (15/32) **threaded bushing only.**

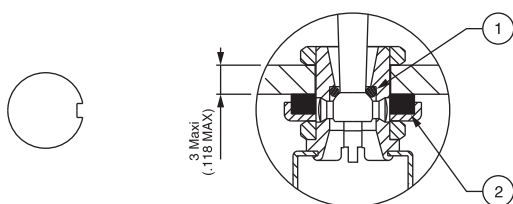
Not available with levers 8, 9, 12, 22, 23.



- KB Combined sealings

- ① O-ring
- ② Sealing washer

K with $\varnothing 6,35$ (1/4)
keyway bushing



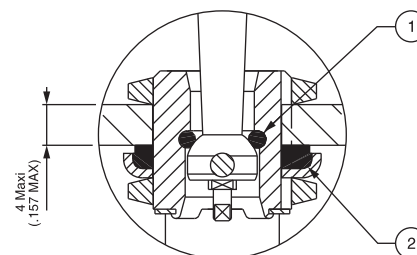
Includes washer
U360

K with $\varnothing 6,35$ (1/4)
flatted bushing



Includes washer
U5141

K with $\varnothing 11,9$ (15/32)
keyway bushing

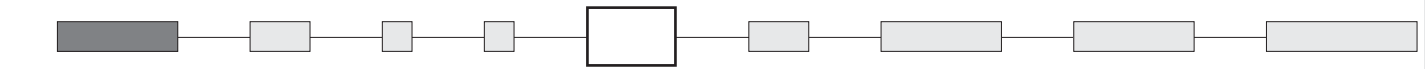


Includes washer
U60

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



FLUORESCENT TIP



Blank None

038 White fluorescent tip.
Becomes luminous when submitted to ultraviolet rays.

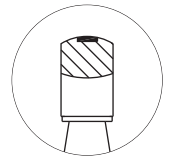
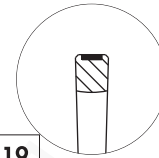


Available with matt black finish (option G) only.

Consult factory for levers available with this option.

Standard lever

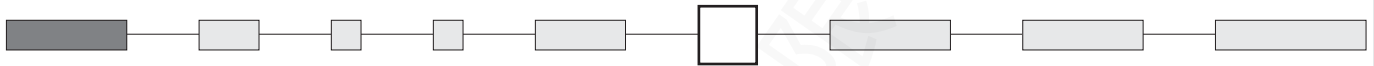
Locking lever



-19

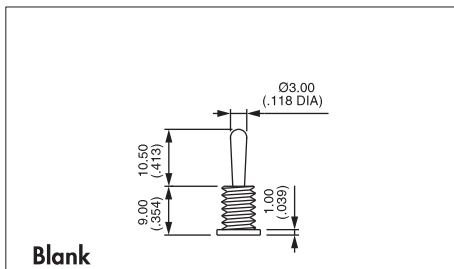
Same dimensions as standard actuator below.

ACTUATORS

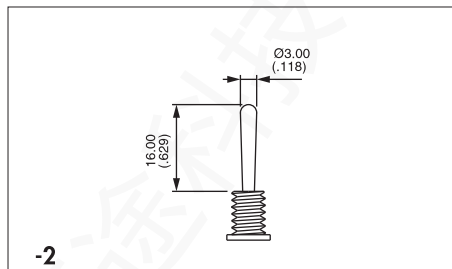


Levers for threaded bushing models Ø 6,35 (1/4) or Ø 6 (.236)

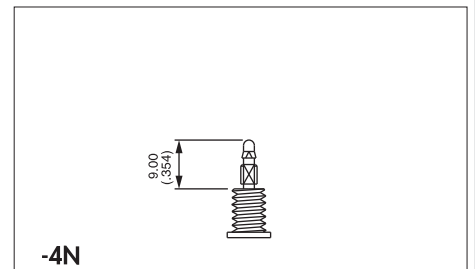
Dash compulsory before lever code.



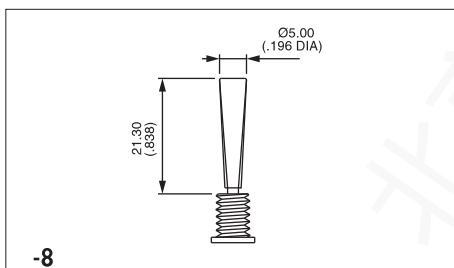
Blank
Standard



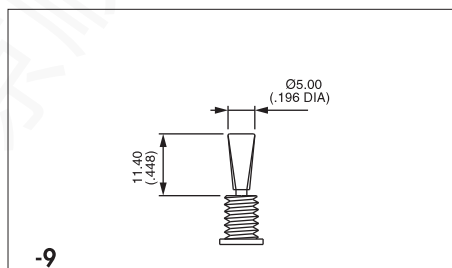
-2



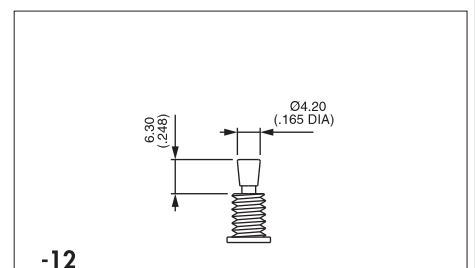
-4N
For use with paddles only



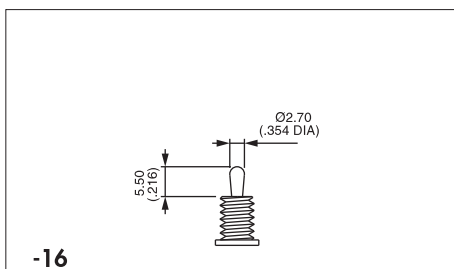
-8
Not available with sealing options K or X408



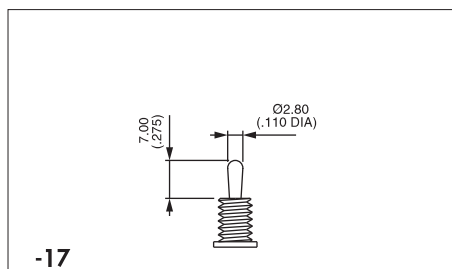
-9
Not available with sealing options K or X408



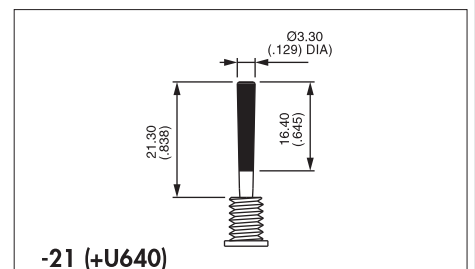
-12
Not available with sealing options K or X408



-16



-17



-21 (+U640)

U640 to be placed in last box of ordering format. Replace 0 by colour code.

5000 series

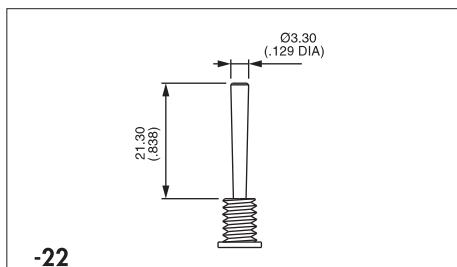
Toggle switches

仅供产品选型使用

OPTIONS

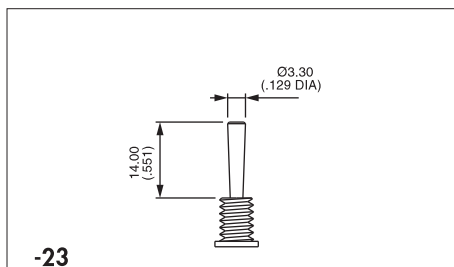


ACTUATORS (continued)



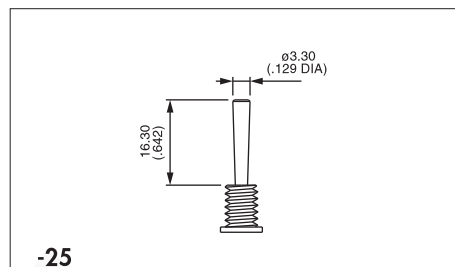
-22

Not available with sealing options K or X408



-23

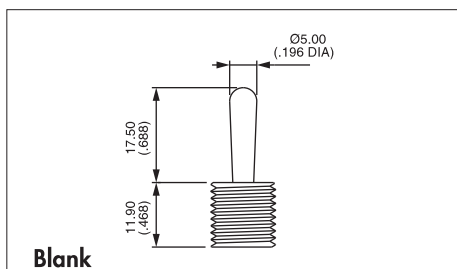
Not available with sealing options K or X408



-25

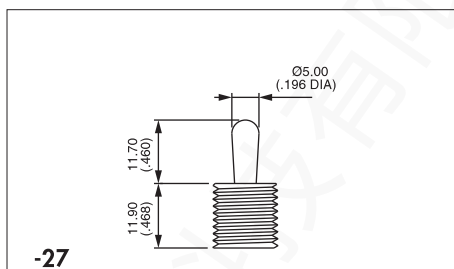
Not available with sealing options K or X408

Levers for threaded bushing models Ø 11,9 (15/32) : 5600M



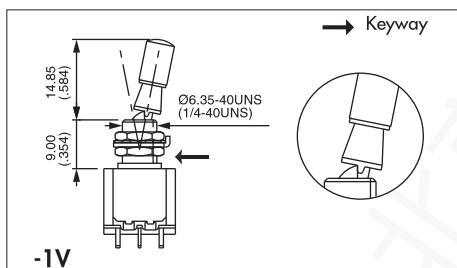
Blank

Standard



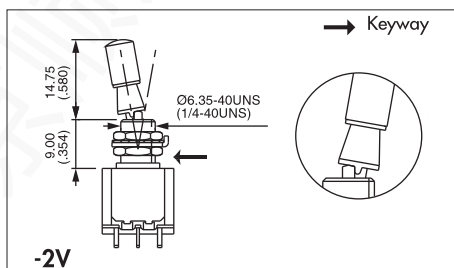
-27

Locking levers



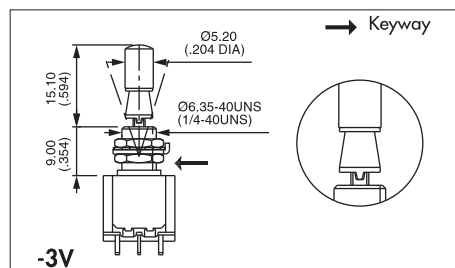
-1V

1 locked position (function 6)



-2V

2 locked positions (function 6)



-3V

3 locked positions (functions 9 and 4)

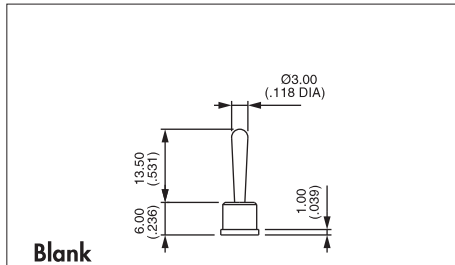
Consult factory for other locking lever options.



Available with Ø 6,35 mm (1/4) threaded bushing models only.
For plain bushing models, see X386 or X916 under "Special options" on the following pages.

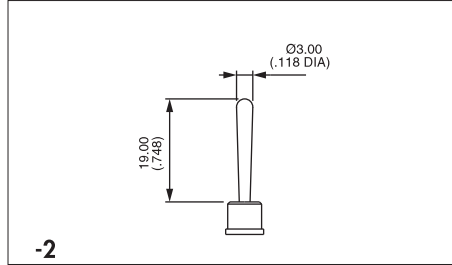
ACTUATORS (continued)

For plain bushing models : W - WW and Y

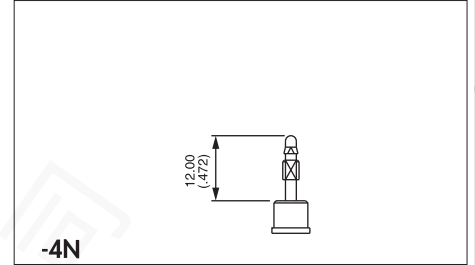


Blank

Standard

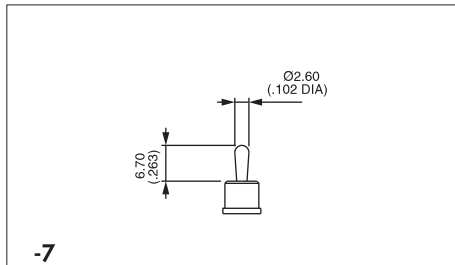


-2

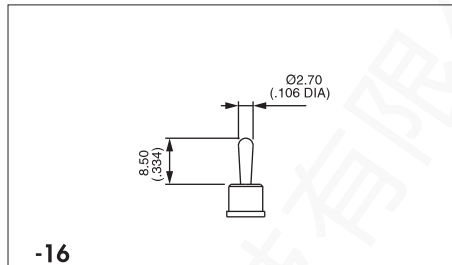


-4N

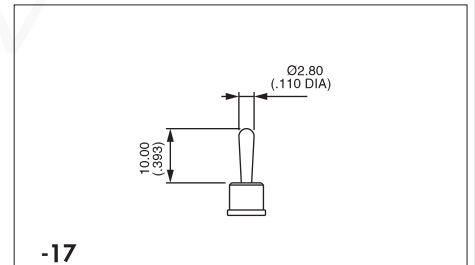
For use with paddles only



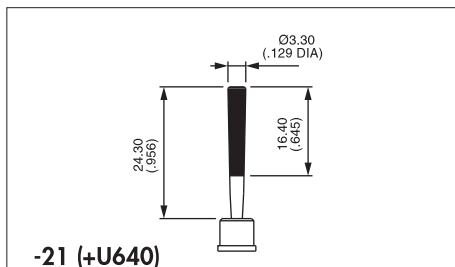
-7



-16



-17



-21 (+U640)

U640 to be placed in last box of ordering format. Replace 0 by colour code.

Actuator colours

Replace "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



LEVER LENGTH

With bracket or mounting plate lever length will be reduced by 0,4 mm (.015) as a rule. Please refer to switch technical drawings in "Model Structure" pages for details.

5000 series

Toggle switches

仅供产品选型使用

OPTIONS



SPECIAL OPTIONS

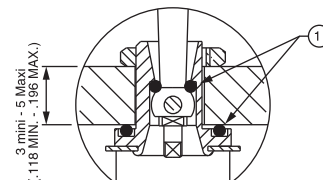
Blank No special requirement

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. Includes sealed terminals (option B).

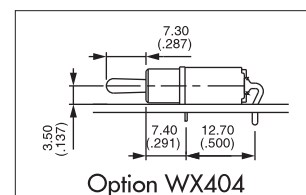
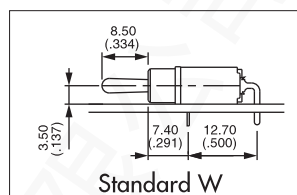


Available only on models with threaded bushing except 5600M. Not available with levers 8, 9, 12, 22, 23.

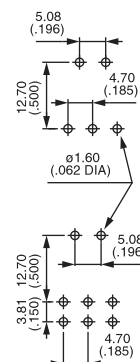
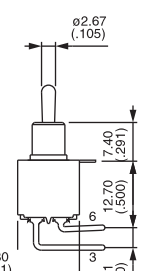
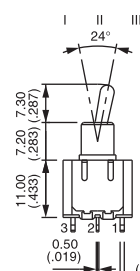
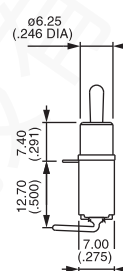
① O-rings



X404 Horizontal right angle with reduced overall dimensions (shown with lever -16)

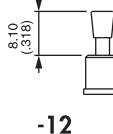
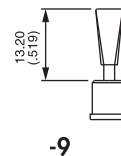
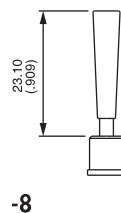
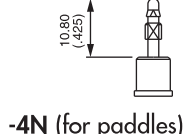
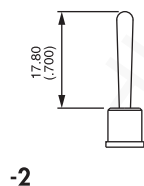
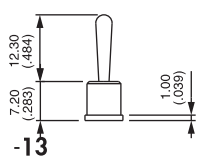


	III 2-3 5-6	II 1-2 4-5	I 1-2 4-5
Single pole			
5236W X404	ON	-	ON
5239W X404	ON	OFF	ON
5237W X404	MOM	OFF	MOM
5238W X404	ON	OFF	MOM
5232W X404	ON	-	MOM
5244W X404*	ON	ON	ON
5244W1R X404*	ON	ON	MOM
5244W2R X404*	MOM	ON	MOM

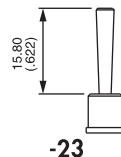
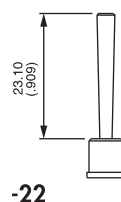
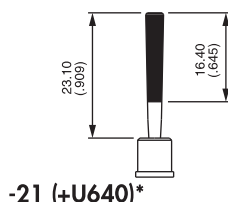
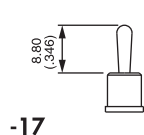
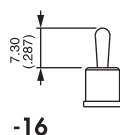


* Function 4 : SP in DP case - specify CT or TH connections, see end of catalogue.

Levers lengths for WX404 (also available with X445 option)



Note : levers -8, -9 and -12 not available with function 2 (ON-MOM)



* U640 to be placed in last box of ordering format. Replace 0 by colour code.

Insulating caps and paddles for X404 :

Insulating cap U1710 available with lever style 16.

Paddles U240N, U290N and U390N available with lever style 4N. See details on next pages.

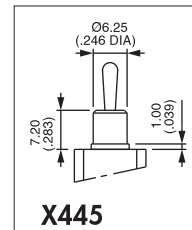
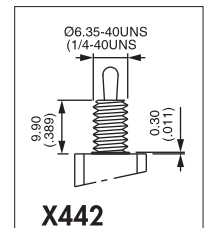
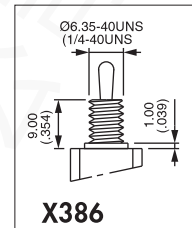
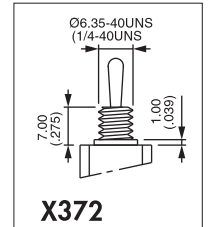
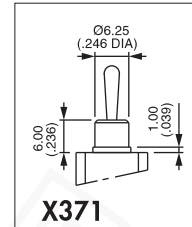


SPECIAL OPTIONS (continued)



With options X372, X386, X442 and X445, the lever lengths indicated on previous pages will be modified.

- X371** Plain bushing Ø 6,25 mm (.246) (instead of standard threaded bushing).
- X372** Threaded bushing Ø 6,35 (1/4). **Height 7 mm (.274).**
- X386** Threaded bushing Ø 6,35 mm (1/4) to replace plain bushing on models W - WW and Y.
- X442** Threaded bushing Ø 6,35 mm (1/4) - **Height 9,9 mm (.389).**
- X445** Plain bushing. **Height 7,2 mm (.283)** - for W, WW and Y models. Available with the same levers, insulating cap and paddles as X404.
- X601** **Silver plated brass contacts.**
Current/voltage rating for an electrical life of 20.000 cycles :
0,2A 250VAC - 0,4A 125VAC - 0,5A 30VDC.
Minimum quantity : 5.000 pieces per model and shipment.



X681 **Satin chrome** actuator

X814 Switches for peak currents

Peak current up to 120A (1 ms) 60VDC - single/double pole

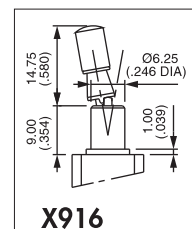


Single pole 5636A X814	ON - ON
Double pole 5646A X814	ON - ON

- Contacts : silver/nickel alloy (AgNi)
- Max. current/voltage rating :
2/120A (1 ms) 60VDC - 10.000 cycles
3/40A 125VAC - 250VAC - 10.000 cycles
- Further specifications and dimensions : see 5600 series.
- General information on peak currents : see end of catalogue.

X902 Plain bushing Ø 6,25 mm (.246) - **Height 9 mm (.354).**

X916 Locking lever on model with plain bushing.

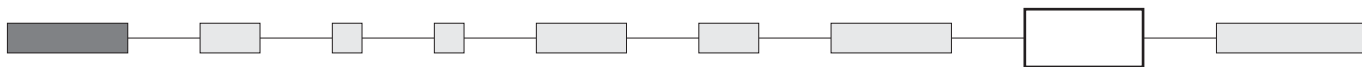


5000 series

Toggle switches

OPTIONS
● ● ●

AGENCY APPROVALS



UL
CSA
CECC

All standard models, except 5200MIWR

Standard models 5600 - 5200

Availability : consult factory for details of approved combinations or options.

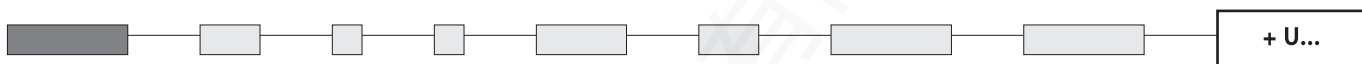
Marking : to order switches marked UL, CSA or CECC, complete above box with desired approvals, in this order & without space (ex. : ULCSACECC). Blank : no agency approval required.

VDE (with UL & CSA)

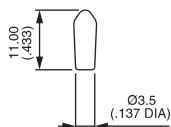
Refer to 55000 series on the following pages.

Preferential lists : see specifications.

INSULATING CAPS AND PADDLES

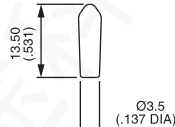


Insulating caps



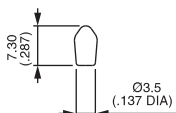
U270

For lever 13 and threaded bushing only



U1040

For lever 13 and plain bushing only



U1710

For lever 17 and threaded bushing
For lever 7 and plain bushing

Cap colours

Replace last
"0" by number

1	blue
1/4	dark blue
2	black
3	green
4	grey
5	yellow
6	red
7/1	white
9	orange



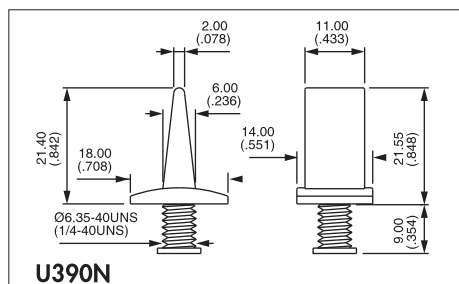
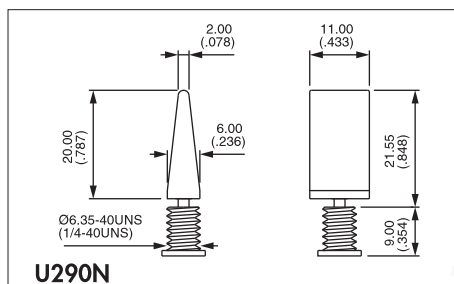
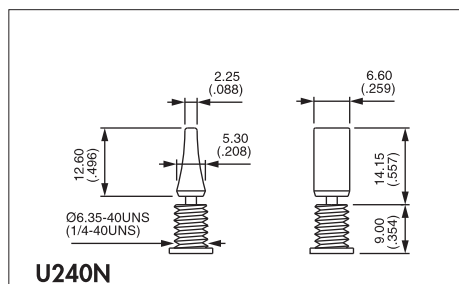
Insulating caps are not available in ivory colour.



INSULATED CAPS AND PADDLES (continued)

Paddles

For use with lever 4N only. Shown with standard threaded bushing. Order separately.



Paddle 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

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) : 2A 250VAC - 4A 125VAC - 4A 30VDC
 - gold contacts (D) : 200mA 250VAC - 400mA 125VAC
- 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	2A 250VAC - 4A 125VAC - 4A 30VDC	50.000	50.000
AD2 X780	2A 250VAC - 4A 125 VAC - 4A 30VDC (Gold plating : 100mA 30VDC max.)	20.000	20.000
D	200mA 250VAC - 400mA 125VAC	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

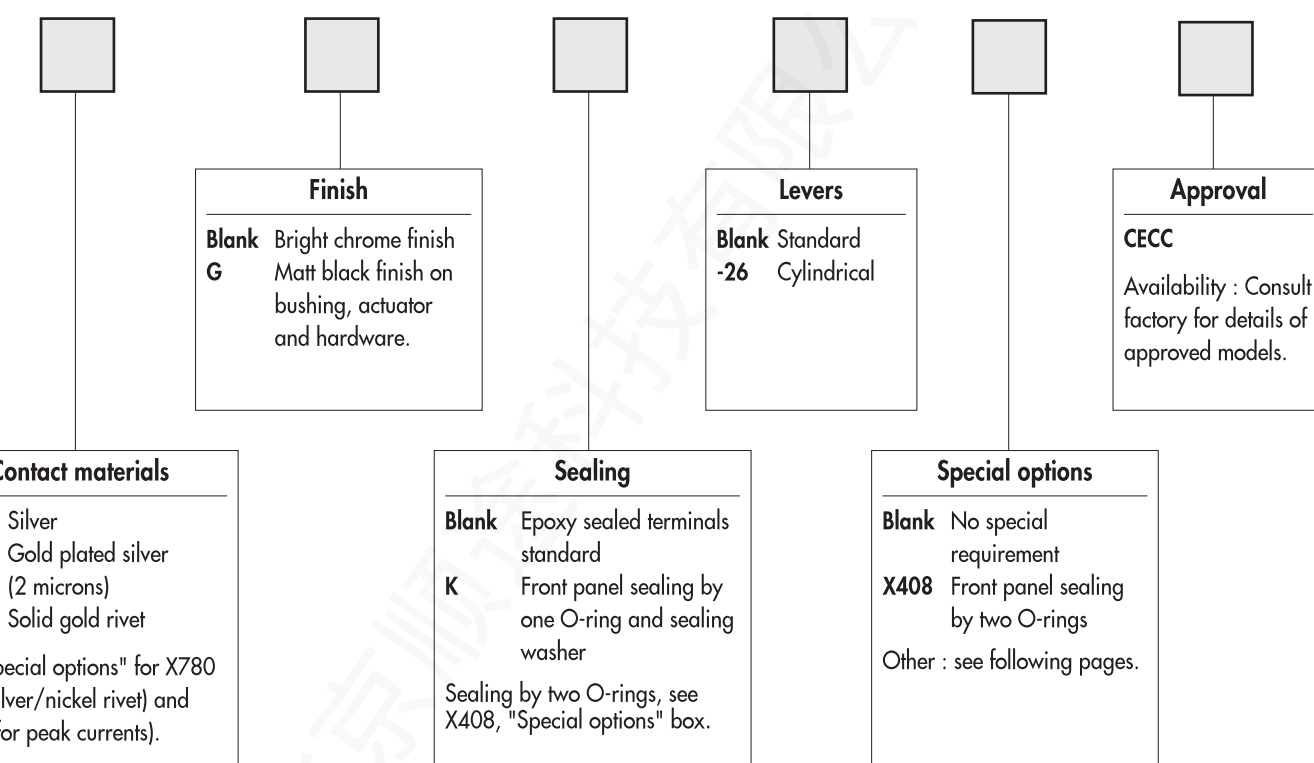
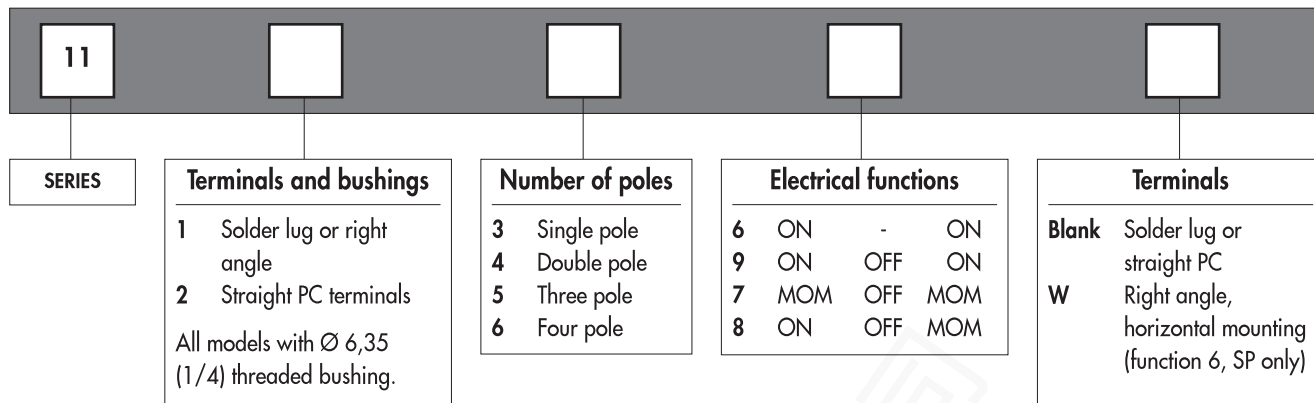
Availability : consult factory for details of approved models.

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

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



Packaging unit : 25 pieces or 50 pieces depending on 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 8 (.314) across flats, 1 locking ring and 1 lockwasher. Standard and special hardware available are presented in section I.

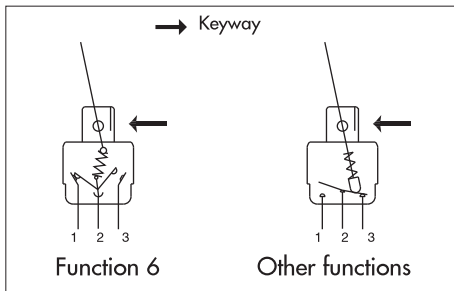
11000 series

仅供产品选型使用

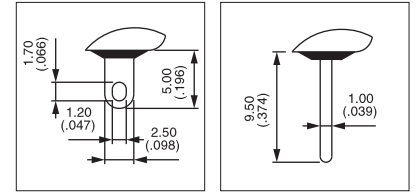
Professional toggle switches - threaded bushing $\varnothing 6,35$ (1/4)

MODEL
STRUCTURE

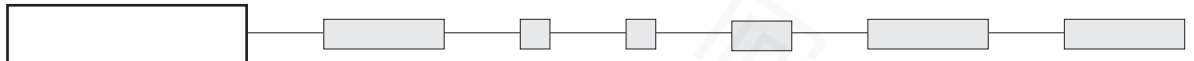
A



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



MODEL
STRUCTURE



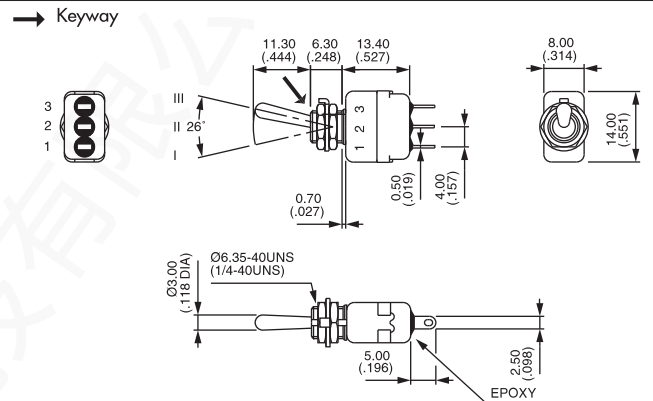
Shown with standard lever

Solder lug terminals - single pole



11136
11139
11137
11138

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

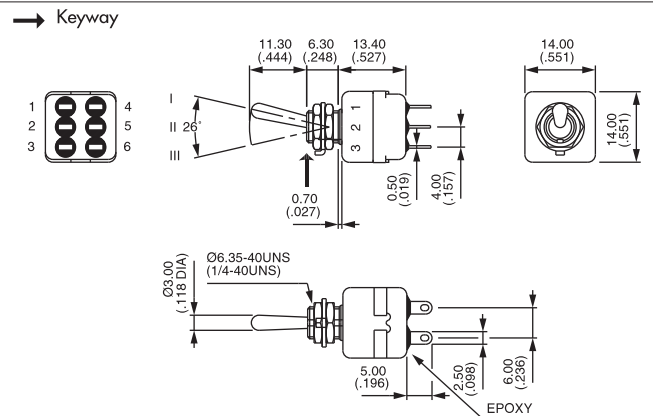


Solder lug terminals - double pole



11146
11149
11147
11148

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

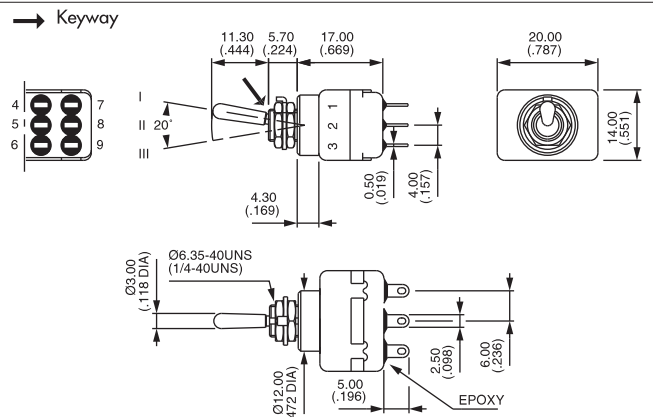


Solder lug terminals - three pole



11156
11159
11157
11158

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



Solder lug terminals - four pole

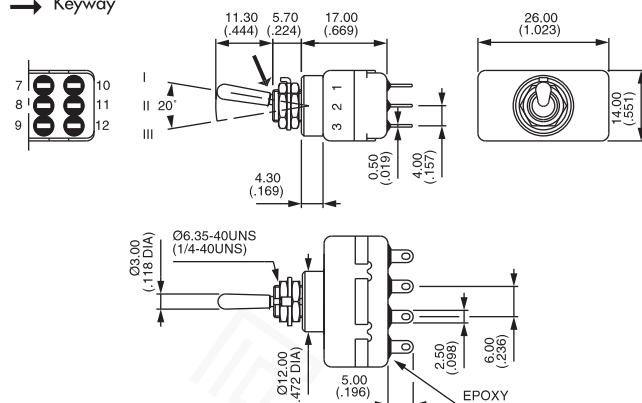


11166
11169
11167
11168

II II IIII

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

→ Keyway



Straight PC terminals - single pole ▲

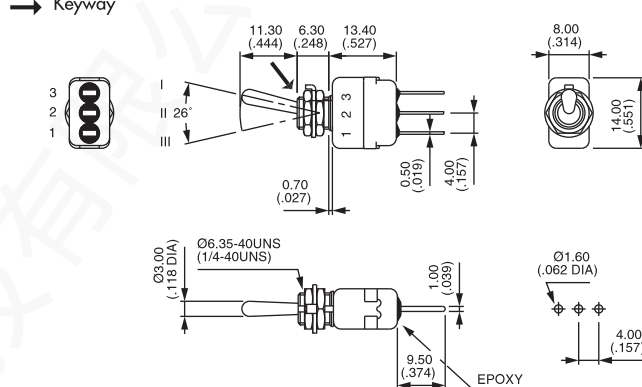


11236

|| || ||||

ON - ON

→ Keyway



Straight PC terminals - double pole ▲

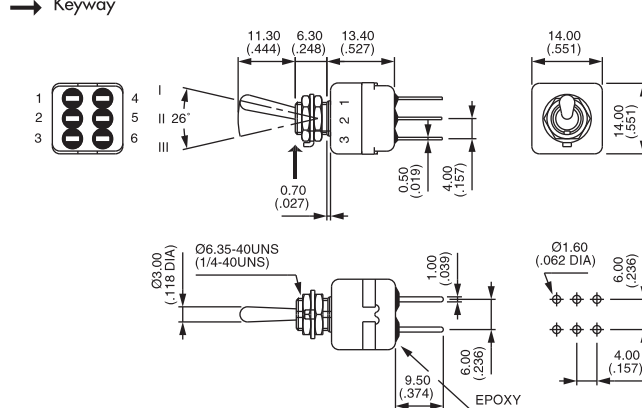


11246

|| || |||

ON - ON

→ Keyway



Straight PC terminals - three pole ▲

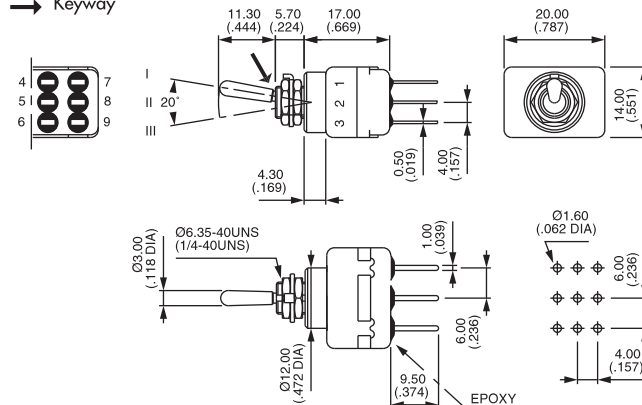


11256

II II IIII

ON - ON

→ Keyway

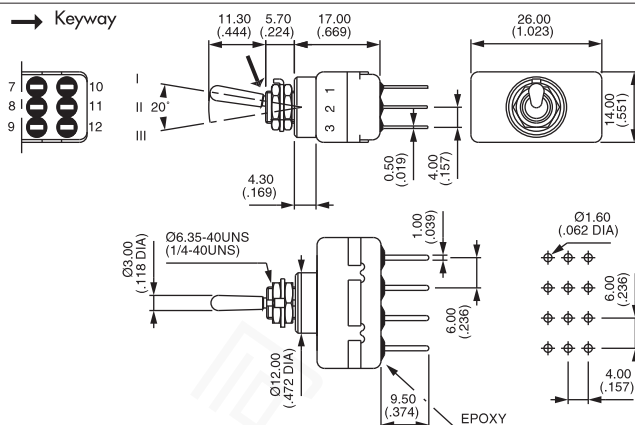


Straight PC terminals - four pole ▲



11266

ON - ON

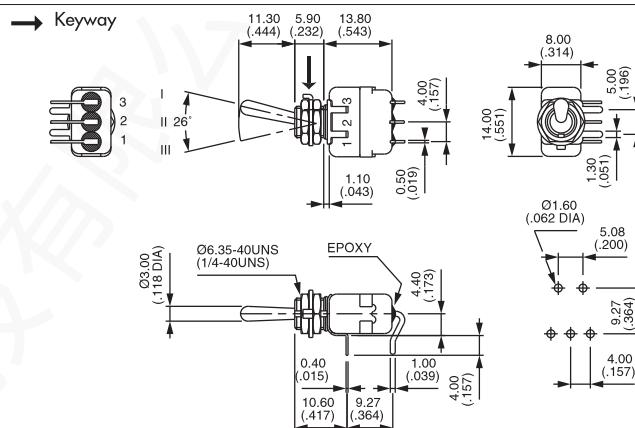


Right angle terminals - horizontal - single pole

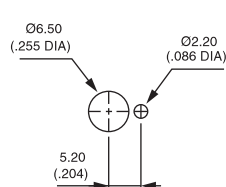


11136W

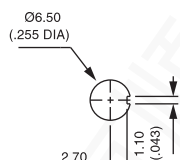
ON - ON



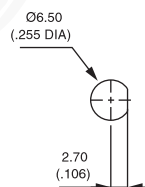
PANEL CUT-OUT



Standard

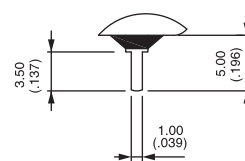


With **K**
sealing option



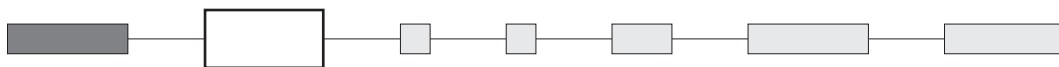
With **X408**
sealing option

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





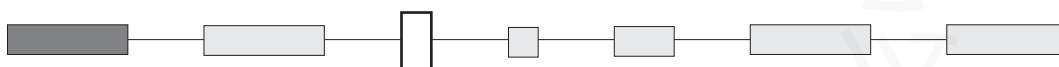
CONTACT MATERIALS



- 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** Matt black finish on bushing, lever and hardware.

Other finish, consult factory.

SEALING

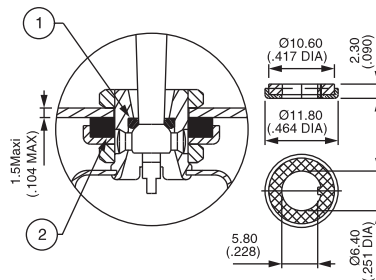


Epoxy sealed terminals are standard.

- 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.



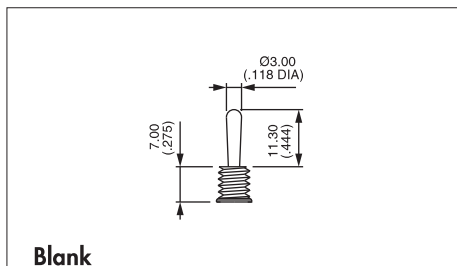
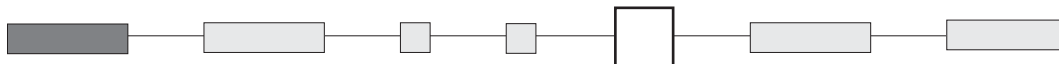
Not available on 11000W model.



① O-ring ② Sealing washer

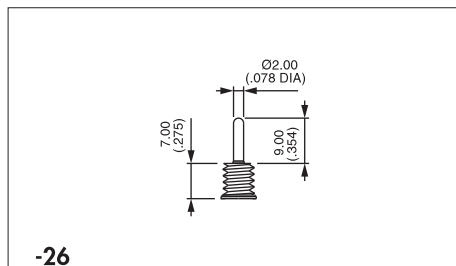
Sealing by two O-rings, see X408 under "Special options".
Sealing boots : see section H.

LEVERS



Blank

Standard



-26

Cylindrical

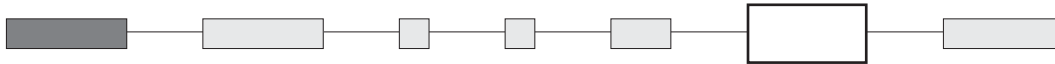
11000 series

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

OPTIONS



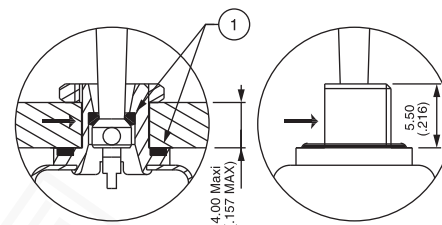
SPECIAL OPTIONS



- 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

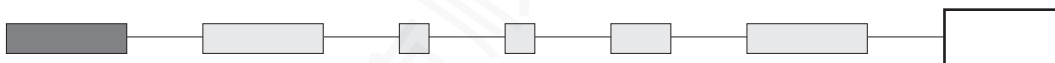
ON - ON

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
2/30A 250VAC - 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.

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) : 2A 250VAC - 4A 125VAC - 4A 30VDC
 - gold contacts (D) : 200mA 250VAC - 400mA 125VAC
- 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	2A 250VAC - 4A 125VAC - 4A 30VDC	50.000	50.000
AD2 X780	2A 250VAC - 4A 125 VAC - 4A 30VDC (Gold plating : 100mA 30VDC max.)	20.000	20.000
D	200mA 250VAC - 400mA 125VAC	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

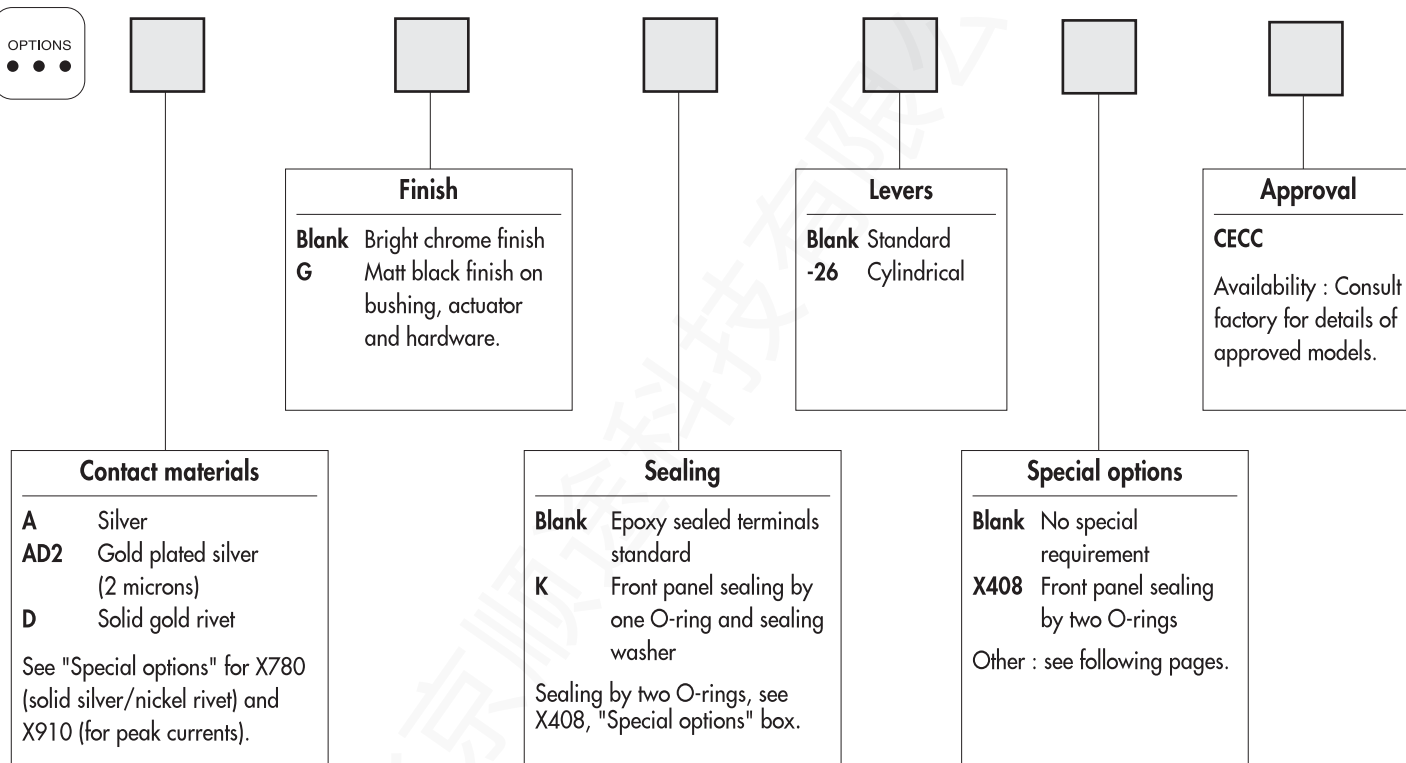
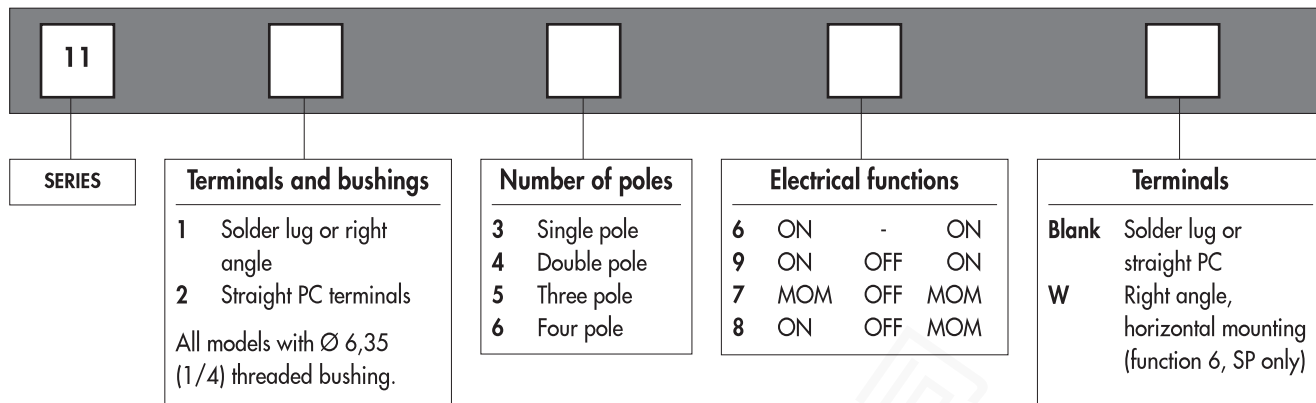
Availability : consult factory for details of approved models.

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.



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.

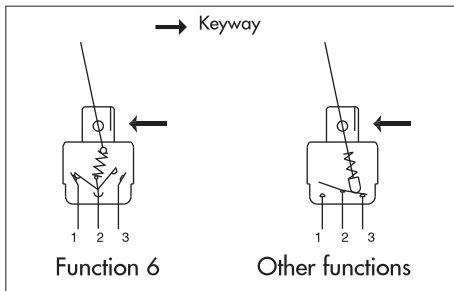
11000 series

仅供产品选型使用

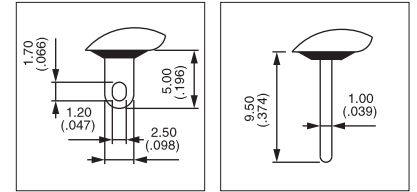
Professional toggle switches - threaded bushing $\varnothing 6,35$ (1/4)

MODEL
STRUCTURE

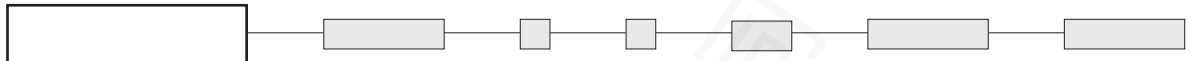
A



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



MODEL
STRUCTURE



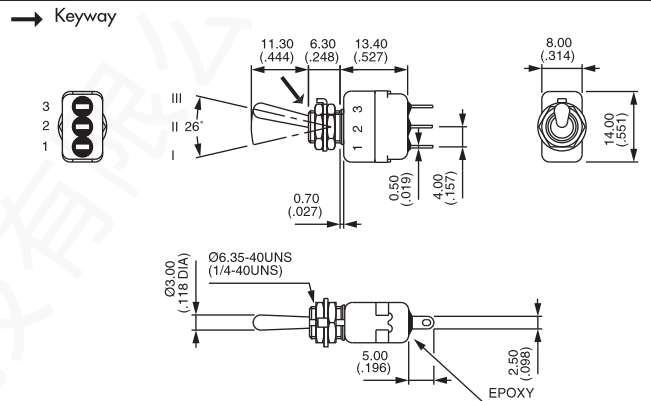
Shown with standard lever

Solder lug terminals - single pole



11136
11139
11137
11138

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

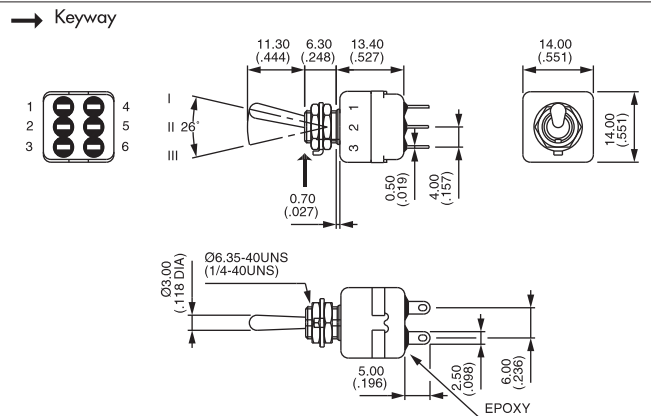


Solder lug terminals - double pole



11146
11149
11147
11148

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

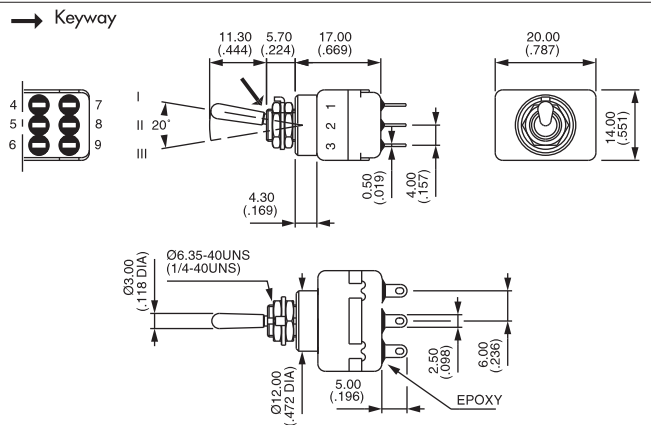


Solder lug terminals - three pole



11156
11159
11157
11158

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



Solder lug terminals - four pole

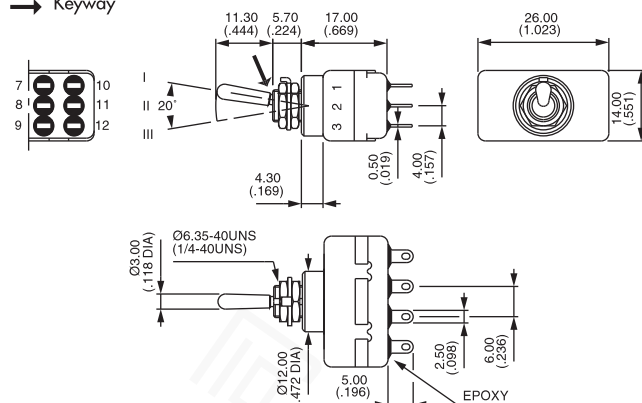


11166
11169
11167
11168

II II III

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

→ Keyway



Straight PC terminals - single pole ▲

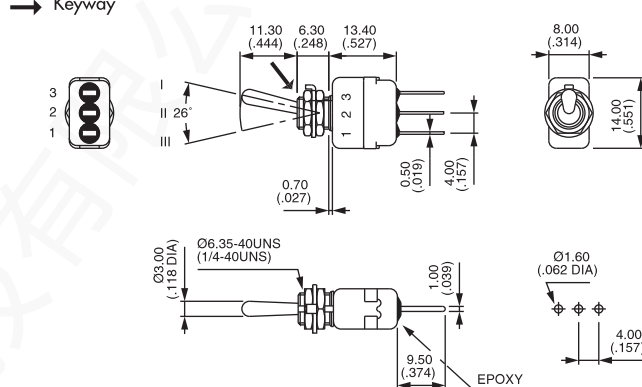


11236

II II III

ON - ON

→ Keyway



Straight PC terminals - double pole ▲

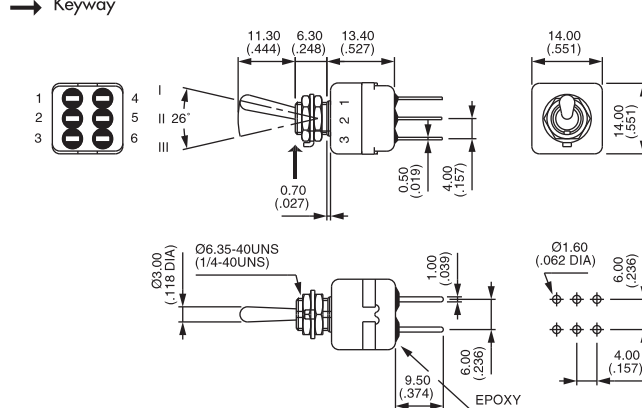


11246

II II III

ON - ON

→ Keyway



Straight PC terminals - three pole ▲

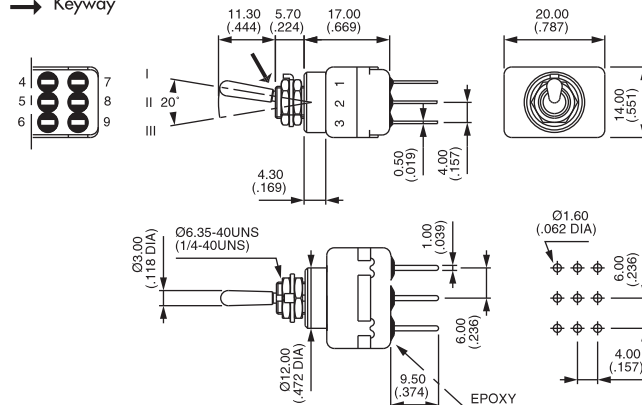


11256

II II III

ON - ON

→ Keyway

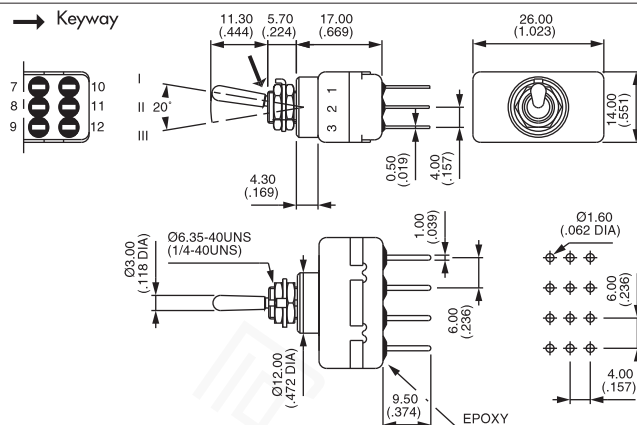


Straight PC terminals - four pole ▲



11266

ON - ON

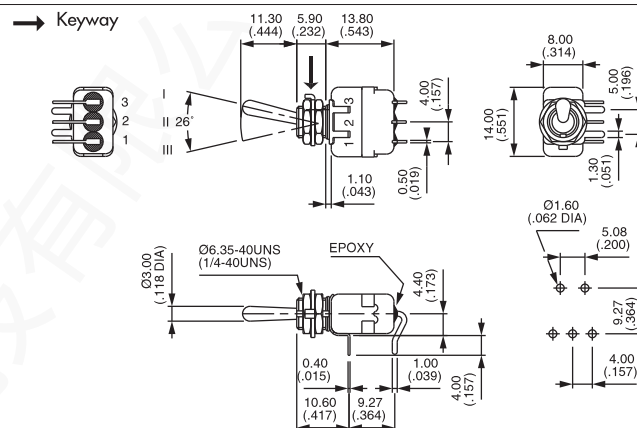


Right angle terminals - horizontal - single pole

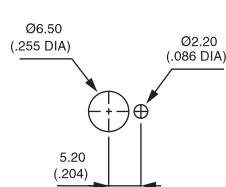


11136W

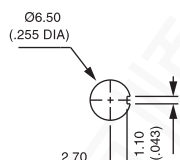
ON - ON



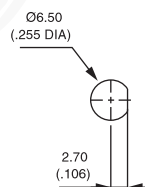
PANEL CUT-OUT



Standard

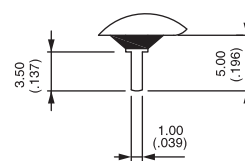


With **K**
sealing option



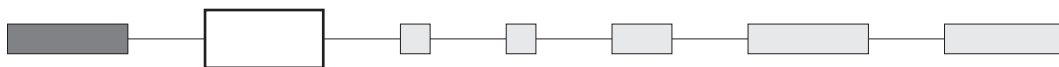
With **X408**
sealing option

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





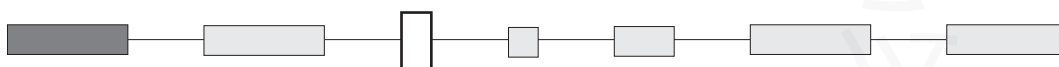
CONTACT MATERIALS



- 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** Matt black finish on bushing, lever and hardware.

Other finish, consult factory.

SEALING

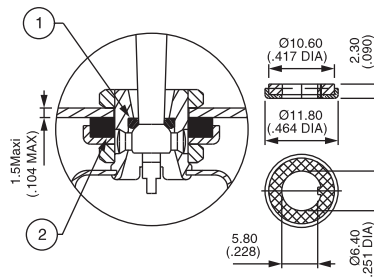


Epoxy sealed terminals are standard.

- 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.



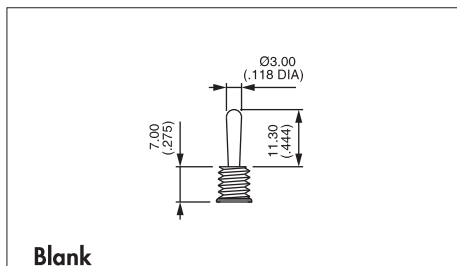
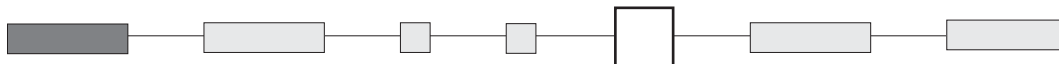
Not available on 11000W model.



① O-ring ② Sealing washer

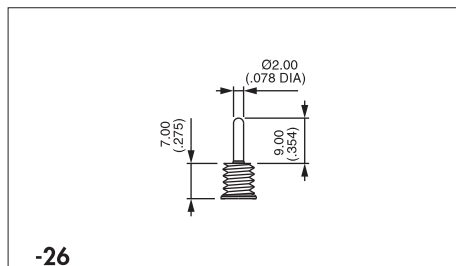
Sealing by two O-rings, see X408 under "Special options".
Sealing boots : see section H.

LEVERS



Blank

Standard



-26

Cylindrical

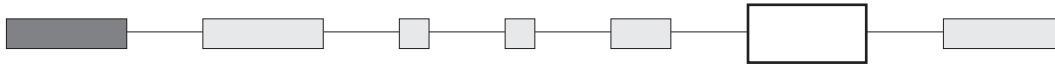
11000 series

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

OPTIONS



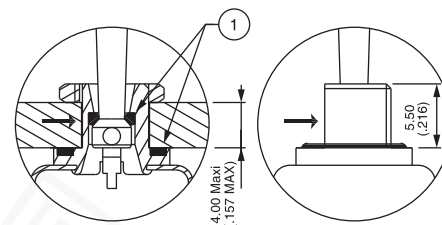
SPECIAL OPTIONS



- 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

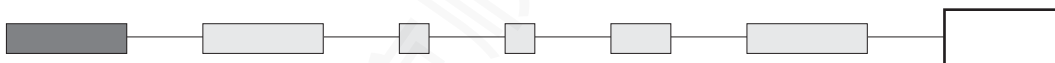
ON - ON

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
2/30A 250VAC - 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.

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
 - silver contacts (A-AD2-X780) : 2A 250VAC - 4A 125VAC - 4A 30VDC
 - gold contacts (D) : 200mA 250VAC - 400mA 125VAC
- 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	2A 250VAC - 4A 125VAC - 4A 30VDC	50.000	50.000
AD2 X780	2A 250VAC - 4A 125 VAC - 4A 30VDC (Gold plating : 100mA 30VDC max.)	20.000	20.000
D	200mA 250VAC - 400mA 125VAC	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** Matt 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

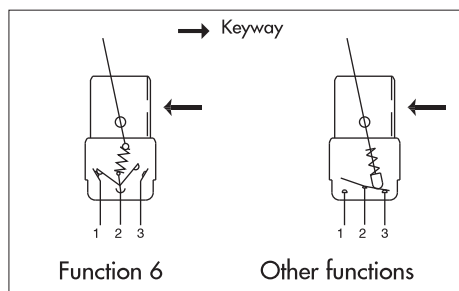


Sealing boots are available to protect the switches against dust and water. They are presented in section H.



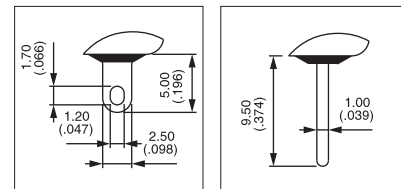
Mounting accessories : standard hardware supplied with all models : 2 hex nuts 14 (.551) across flats and 1 locking ring. Standard and special hardware available are presented in section I.

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

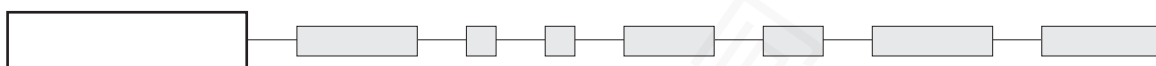


- Epoxy sealed terminals standard

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



MODEL
STRUCTURE



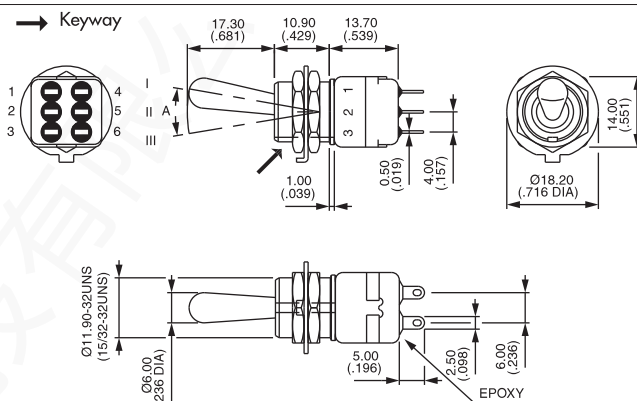
Shown with standard lever

Solder lug terminals - double pole



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

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



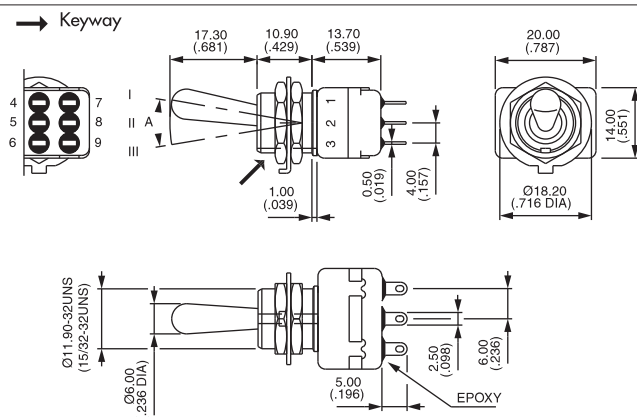
* Function 4 : SP in DP case - connections, see end of catalogue.

Solder lug terminals - three pole



12156
12159
12157
12158

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

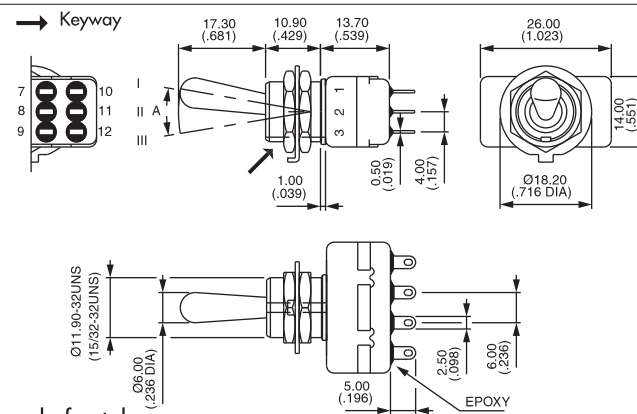


Solder lug terminals - four pole



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

I	II	III
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

仅供产品选型使用

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

Straight PC terminals : 12200

MODEL
STRUCTURE

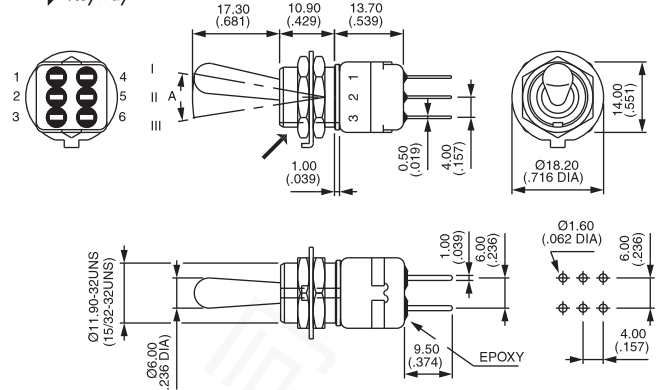
Straight PC terminals - double pole ▲



12246

I II III
ON - ON

→ Keyway



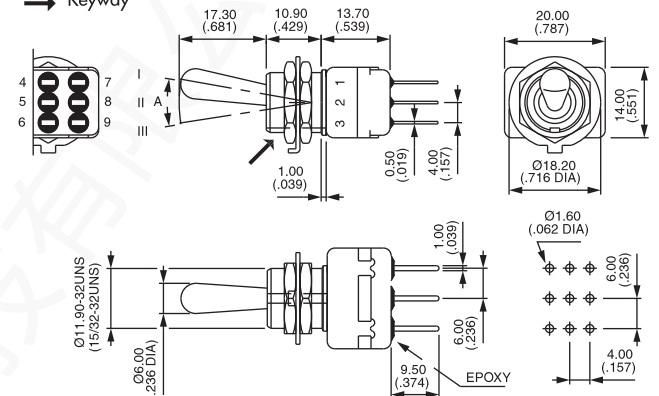
Straight PC terminals - three pole ▲



12256

I II III
ON - ON

→ Keyway



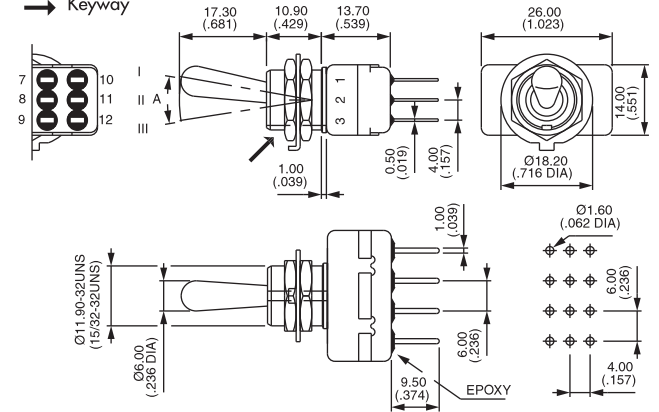
Straight PC terminals - four pole ▲



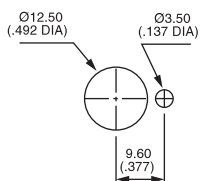
12266

I II III
ON - ON

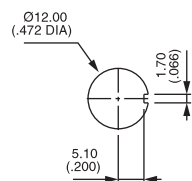
→ Keyway



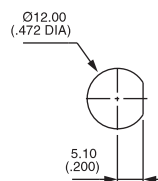
PANEL CUT-OUT



Standard

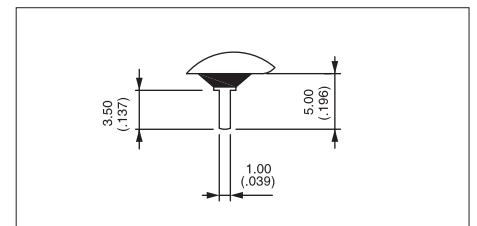


With K
sealing option



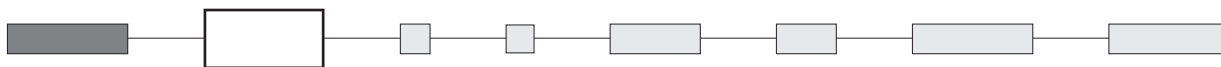
With X408
sealing option

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





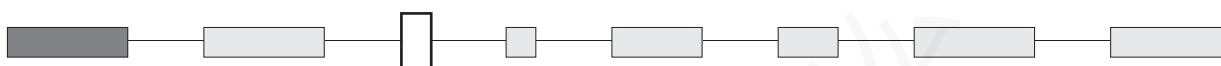
CONTACT MATERIALS



- 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** Matt black finish on bushing, lever and hardware.

For satin chrome finish, see "Special options".

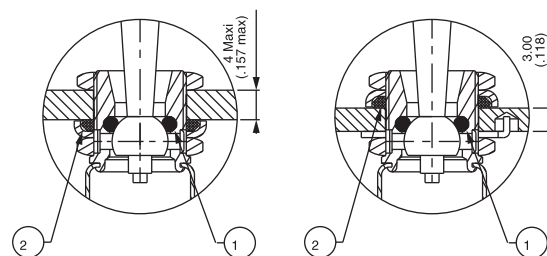
SEALING



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



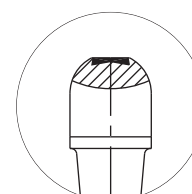
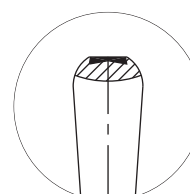
- Blank** None
- 038** White fluorescent tip. Becomes luminous when submitted to ultra-violet rays.



Available with matt black finish (option G) only.

Standard lever

Locking lever



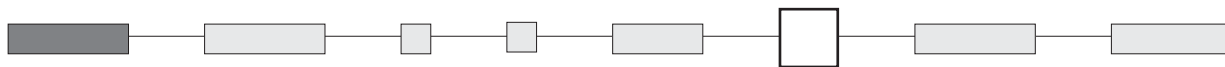
12000 series

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

OPTIONS

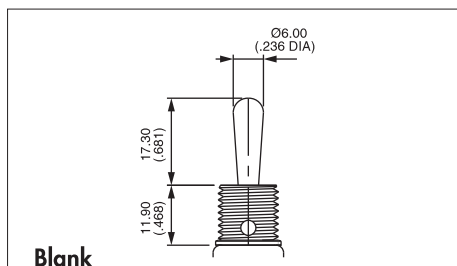


ACTUATORS



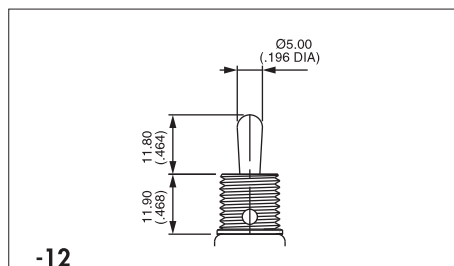
Levers

Dash compulsory before lever code.



Blank

Standard



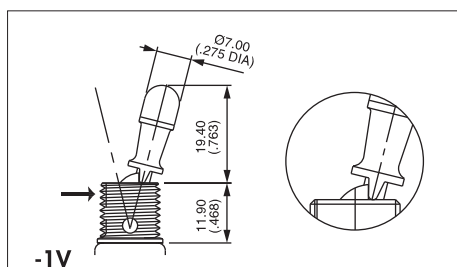
-12

Short lever

Security caps : see section I.

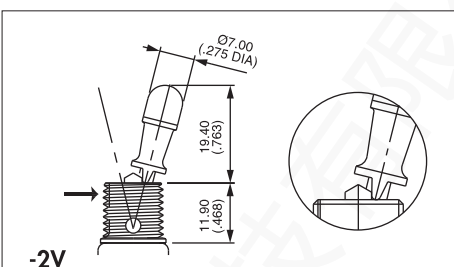
Locking levers

→ Keyway



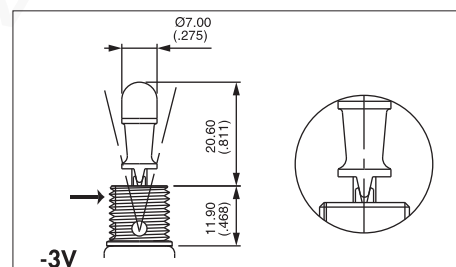
-1V

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



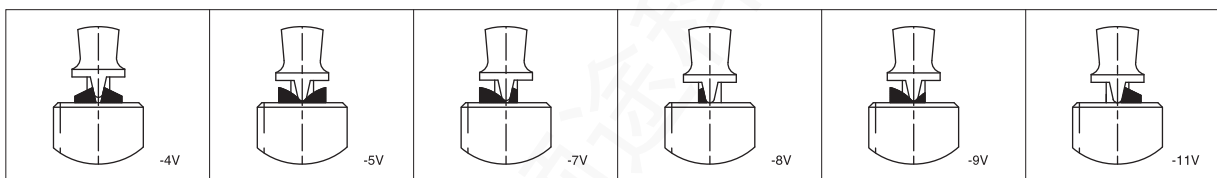
-2V

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

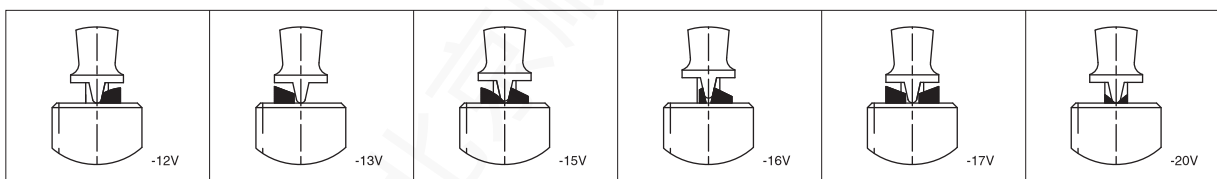
Functions 8 & 441R

Functions 8, 9, 44 & 441R

Functions 8 & 441R

Functions 8, 9, 44 & 441R

New!



Functions 8 & 441R

Functions 8 & 441R

Functions 8 & 441R

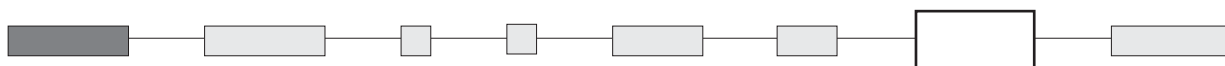
Functions 4 & 9

Functions 7 & 442R

Functions 9 & 44

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

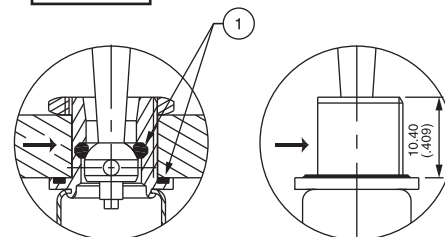
SPECIAL OPTIONS



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.**



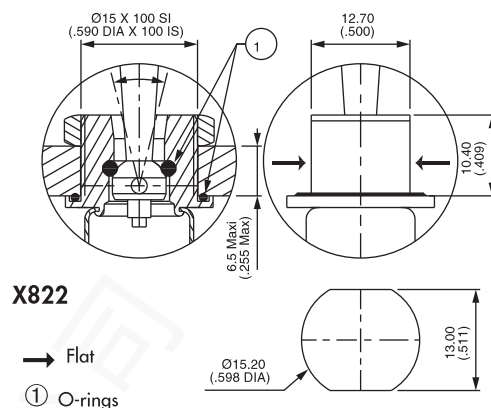
→ Flat ① O-rings



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

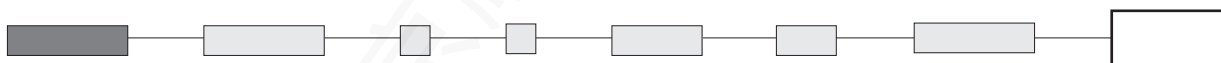


12146 X910

ON - ON

- Contacts : solid rivet - silver/nickel alloy (AgNi)
- Max. current/voltage rating :
3/80A (1 ms) 60VDC - 10.000 cycles
2/30A 250VAC - 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.

12000X778 series

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

Distinctive features

A



□ Approval



CECC 96201-005

CECC 96201-008

This range of professional toggle switches is suitable for use in military and other high specification environments.

□ Contacts

Highly reliable contacts suitable for low level applications (10mA 50mV - 10µA 5VDC min.) or power applications (2A 250VAC - 4A 125VAC - 4A 30VDC max.)

□ Pinned lever

The base of the switch lever is pinned to the bushing, thus earthing the lever to the bushing. This also provides strain relief to protect the switch if accidentally knocked.

□ Double shell case

For high mechanical strength and high electrical insulation.

□ Compact size

The small rear end of the switch allows space saving behind the panel.

□ Finish

Matt black finish on body, bushing, lever and hardware.

□ Sealing

Panel sealed to IP 67, these switches are frontal sealed by two O-rings and have full rear end sealing.

□ Accessories

A comprehensive range of protection boots (both full and half length), locking levers and security caps are available.

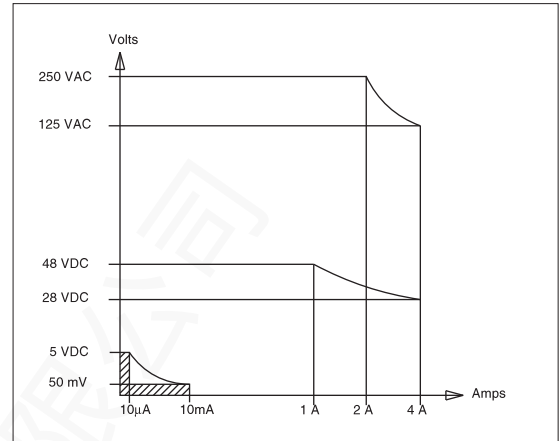
仅供产品选型使用 12000X778 series

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

Specifications

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load : 2A 250VAC - 4A 125VAC - 4A 28VDC
- Minimum load : 10mA 50mV, 10µA 5VDC
When used above 300mA 28VDC, the gold plating is removed on contact areas and is considered only as a protection against oxidation during storage.
- 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
 - 2.000 Vrms 50 Hz min. between terminals and frame
- Contact bounce : 2 ms max.
- Electrical life :
 - At 2A 250VAC - 4A 28VDC :
20.000 cycles (10.000 for functions 5, 4-1R, 4-2R)
 - At low level (50mV 10mA) :
150.000 cycles (switches with 2 maintained positions)
100.000 cycles (switches with 3 maintained positions)
50.000 cycles (momentary functions 7, 8, 4-1R, 4-2R, 5)

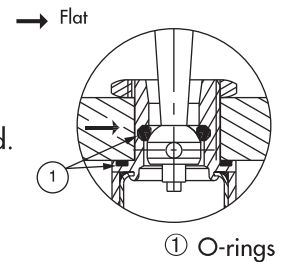


MATERIALS

- Case : diallylphthalate (DAP) with plastic external shell (epoxy sealed)
- Actuator : brass, black chrome plated
- Bushing : brass, black chrome plated
- Contacts : solid rivet - gold plated silver/nickel alloy

SEALING

- Front panel sealing by two O-rings
Flatted bush for precise orientation
- Panel seal withstands 1 bar pressure and remains sealed even when the switch is operated.
- Epoxy sealed terminals
- Splash-proof case



GENERAL SPECIFICATIONS

- Torque : 1,50 Nm (1.10 Ft.lb) max. applied to nut
- Panel thickness : 8 mm (.314) max. - 3 mm (.118) min.
- Shock test : 50g - 11ms (IEC 68-2-27)
- Vibrations : 10-500 Hz - 10g (IEC68-2-6)
- Operating temperature : -40°C to +85°C
- Humidity test : 56 days, 93 % R.H., 40°C (IEC 68-2-3)
- Salt spray test : 96 hours (IEC 68-2-11)

APPROVALS

Many models within this range have full CECC approval and are marked CECC. Please consult factory for list of approved models.

12000X778 series

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

Overview

MODEL
STRUCTURE

12

SERIES

Terminals and bushings

- 1 Solder lug terminals, threaded bushing Ø 11,9 (15/32)
- 2 Straight PC terminals, threaded bushing Ø 11,9 (15/32)

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
4	ON	ON	ON
	ON	ON	MOM Δ
	MOM	ON	MOM Δ
5	ON	MOM	

Function 4

- . For 2 and 4 poles only.
- . Δ Must not have blank in "momentary" box.

Momentary

1R	ON	ON	MOM
2R	MOM	ON	MOM

- . For function 4 only.
- . Leave blank for other functions.

OPTIONS

Fluorescent tip

Blank	None
038	White fluorescent tip to lever

Levers

Blank	Standard lever
-12	Short lever

Locking levers

-1V	1 locked position
-2V	2 locked positions
-3V	3 locked positions

X778

High performance fully sealed matt black switches.

Approval

CECC

Availability :
Consult factory for details of approved models.

ABOUT THIS SERIES

On the following pages, you will find successively :

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

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



Sealing boots can be used to further protect the switches against dust and water. They are presented in section H.



Mounting accessories : standard hardware supplied with all models : 1 hex nut 14 mm (.551) across flats, part number U41. This nut is presented after model structure of switches.

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



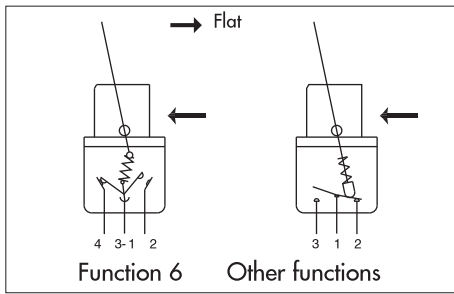
Packaging unit : 2 pole models : 25 pieces
3 and 4 pole models : 20 pieces

仅供产品选型使用 12000X778 series

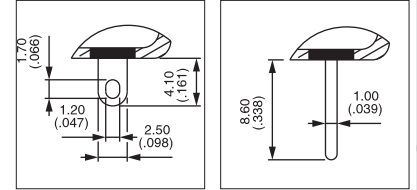
High performance toggle switches - threaded bushing Ø 11,9 (15/32)

Fully sealed - matt black

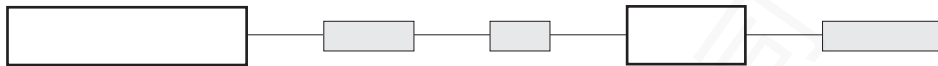
MODEL
STRUCTURE



Typical angle of throw (A)	
Function 6	24°
Functions 9, 7, 8, 4	20°
Function 5	12°



MODEL
STRUCTURE



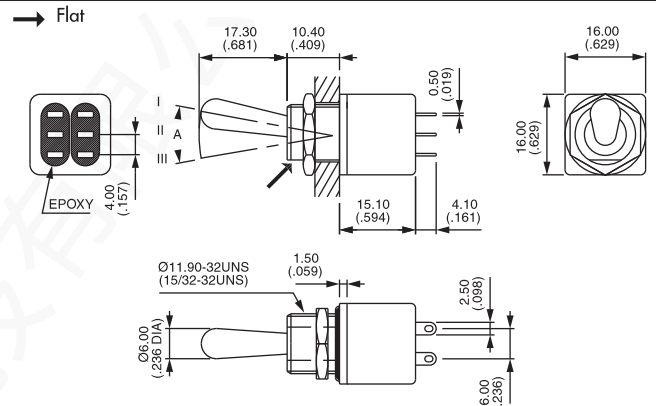
Shown with standard lever

Solder lug terminals - double pole



12146 X778
12149 X778
12147 X778
12148 X778
12144 X778
12144-1R X778
12144-2R X778
12145 X778

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

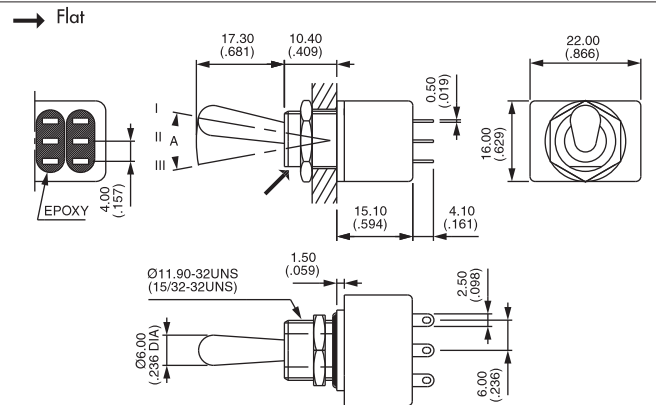


Solder lug terminals - three pole



12156 X778
12159 X778
12157 X778
12158 X778

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

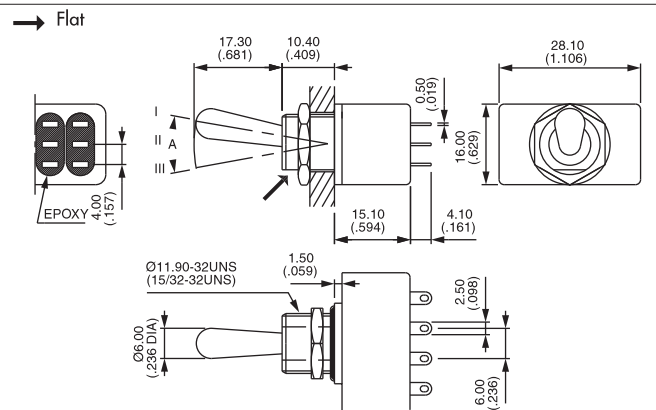


Solder lug terminals - four pole



12166 X778
12169 X778
12167 X778
12168 X778
12164 X778
12164-1R X778
12164-2R X778

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



12000X778 series

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

Fully sealed - matt black

MODEL
STRUCTURE

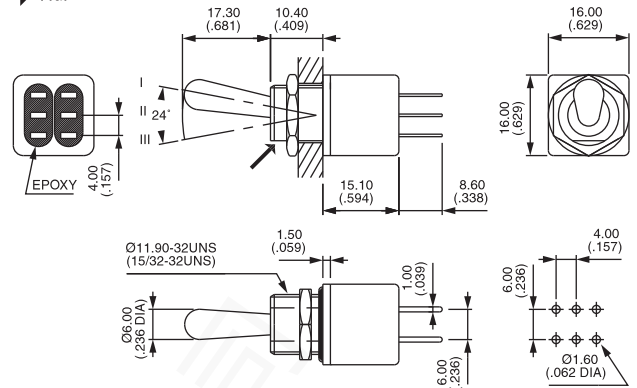
Straight PC terminals - double pole ▲



12246 X778

I II III
ON - ON

→ Flat



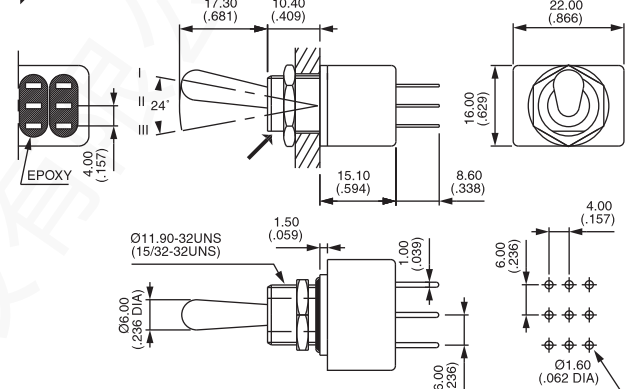
Straight PC terminals - three pole ▲



12256 X778

I II III
ON - ON

→ Flat



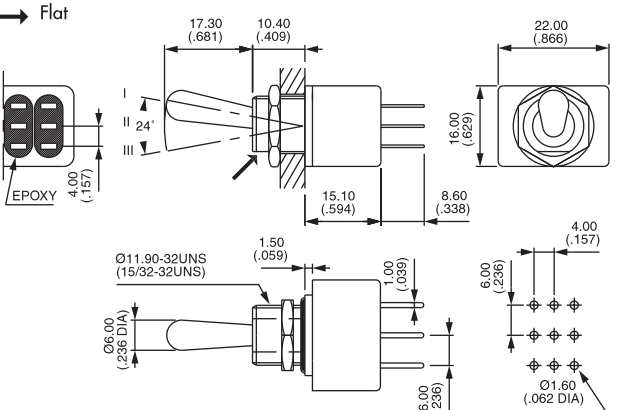
Straight PC terminals - four pole ▲



12266 X778

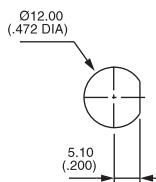
I II III
ON - ON

→ Flat



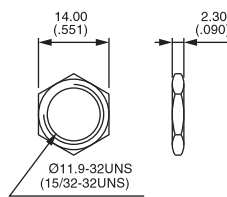
Positions and connections, see next page.

PANEL CUT-OUT



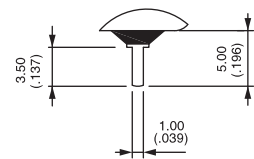
STANDARD HARDWARE

Hex nut



U41 (matt black)

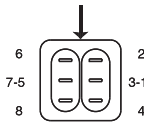
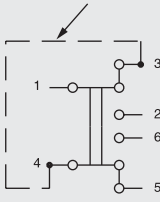
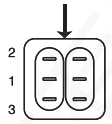
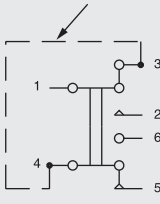
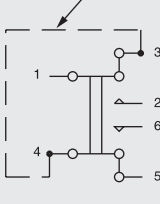
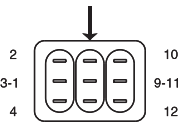
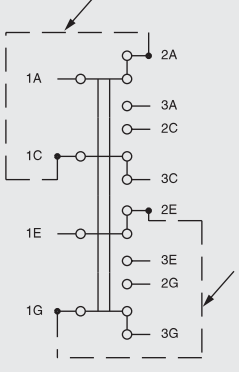
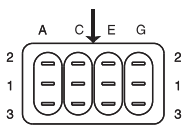
▲ 3,5 mm (.138) short terminals available for function 6, as well as for functions 9, 7, 8, 4 and 5. On request.



仅供产品选型使用 12000X778 series

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

Positions and connections

FUNCTION	LEVER POSITION AND CONNECTIONS			TERMINAL IDENTIFICATION	WIRING FOR 3-WAY SWITCHES (FUNCTION 4)
	I	II	III (Flat)		
12146	ON	-	ON		→ External jumper (added by customer)
12147	MOM	OFF	MOM	→ Flat	12144 
12148	ON	OFF	MOM		
12149	ON	OFF	ON		
12148CT	MOM	OFF	ON		
	1-2		1-3		
	4-5		4-6		
12145	-	ON	MOM		12144-1R 
		1-2	1-3		
		4-5	4-6		
12144	ON	ON	ON		12144-2R 
12144-1R	MOM	ON	ON		
12144-2R	MOM	ON	MOM		
	1-2	1-3	1-3		
	4-5	4-5	4-6		
12156	ON	-	ON		12164 
	(1-3)-4		(1-3)-2		
	(5-7)-8		(5-7)-6		
	(9-11)-12		(9-11)-10		
12166	ON	-	ON		
	1A - 3A		1A - 2A		
	1C - 3C		1C - 2C		
	1E - 3E		1E - 2E		
	1G - 3G		1G - 2G		
12164	ON	ON	ON		
	1A - 2A	1A - 2A	1A - 3A		
	1C - 2C	1C - 3C	1C - 3C		
	1E - 2E	1E - 2E	1E - 3E		
	1G - 2G	1G - 3G	1G - 3G		

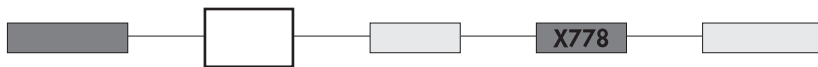
12000X778 series

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

OPTIONS



FLUORESCENT TIP

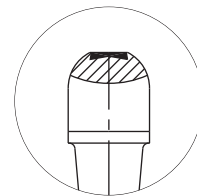
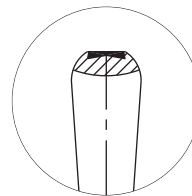


Blank None

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

Standard lever

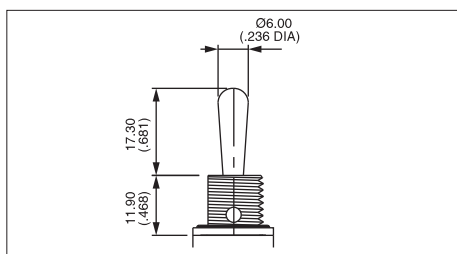
Locking lever



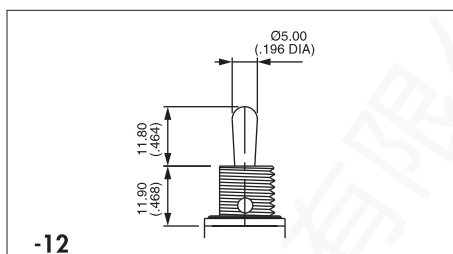
LEVERS / LOCKING LEVERS



Dash compulsory before lever code.



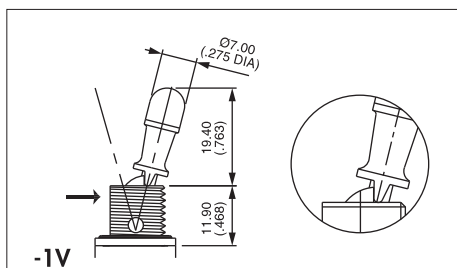
Standard lever (leave blank)



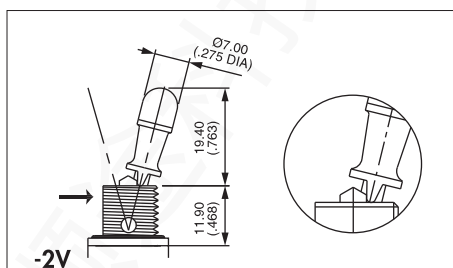
-12
Short lever

Sealing boots : see section H.
Security caps : see section I.

Locking levers

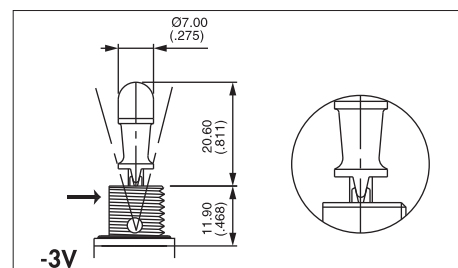


1 locked position (function 6)
Typical angle of throw : 26°

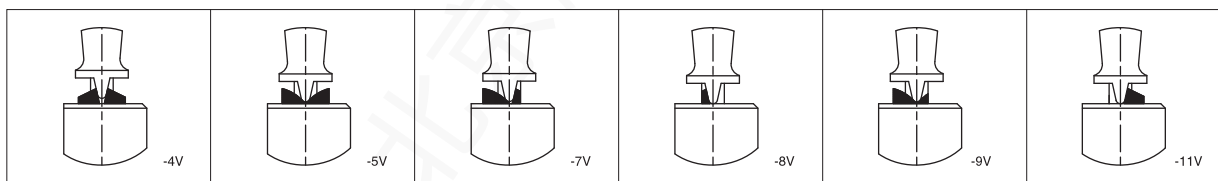


2 locked positions (function 6)
Typical angle of throw : 26°

→ Flat



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



Functions 9 & 4

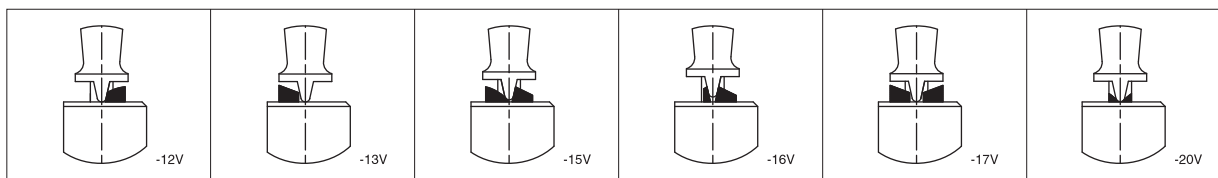
Functions 7 & 442R

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

New!

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

AGENCY APPROVAL



CECC CECC 96201-005 and CECC 96201-008

Availability : consult factory for details of approved models.

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

12000X778 series

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

Distinctive features

A



□ Approval



This range of professional toggle switches is suitable for use in military and other high specification environments.

□ Contacts

Highly reliable contacts suitable for low level applications (10mA 50mV - 10µA 5VDC min.) or power applications (2A 250VAC - 4A 125VAC - 4A 30VDC max.)

□ Pinned lever

The base of the switch lever is pinned to the bushing, thus earthing the lever to the bushing. This also provides strain relief to protect the switch if accidentally knocked.

□ Double shell case

For high mechanical strength and high electrical insulation.

□ Compact size

The small rear end of the switch allows space saving behind the panel.

□ Finish

Matt black finish on body, bushing, lever and hardware.

□ Sealing

Panel sealed to IP 67, these switches are frontal sealed by two O-rings and have full rear end sealing.

□ Accessories

A comprehensive range of protection boots (both full and half length), locking levers and security caps are available.

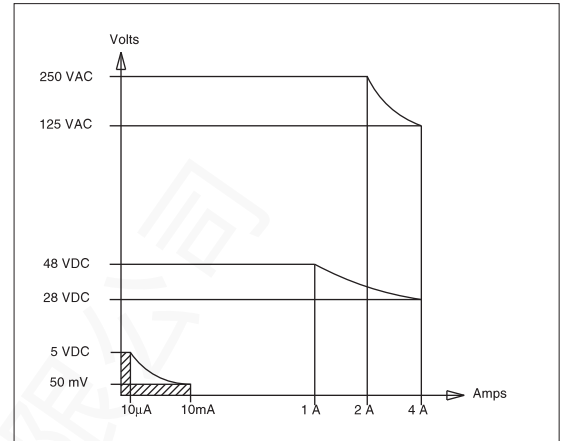
仅供产品选型使用 12000X778 series

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

Specifications

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load : 2A 250VAC - 4A 125VAC - 4A 28VDC
- Minimum load : 10mA 50mV, 10µA 5VDC
When used above 300mA 28VDC, the gold plating is removed on contact areas and is considered only as a protection against oxidation during storage.
- 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
2.000 Vrms 50 Hz min. between terminals and frame
- Contact bounce : 2 ms max.
- Electrical life :
- At 2A 250VAC - 4A 28VDC :
20.000 cycles (10.000 for functions 5, 4-1R, 4-2R)
- At low level (50mV 10mA) :
150.000 cycles (switches with 2 maintained positions)
100.000 cycles (switches with 3 maintained positions)
50.000 cycles (momentary functions 7, 8, 4-1R, 4-2R, 5)

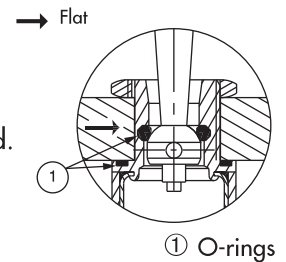


MATERIALS

- Case : diallylphthalate (DAP) with plastic external shell (epoxy sealed)
- Actuator : brass, black chrome plated
- Bushing : brass, black chrome plated
- Contacts : solid rivet - gold plated silver/nickel alloy

SEALING

- Front panel sealing by two O-rings
Flatted bush for precise orientation
- Panel seal withstands 1 bar pressure and remains sealed even when the switch is operated.
- Epoxy sealed terminals
- Splash-proof case



GENERAL SPECIFICATIONS

- Torque : 1,50 Nm (1.10 Ft.lb) max. applied to nut
- Panel thickness : 8 mm (.314) max. - 3 mm (.118) min.
- Shock test : 50g - 11ms (IEC 68-2-27)
- Vibrations : 10-500 Hz - 10g (IEC68-2-6)
- Operating temperature : -40°C to +85°C
- Humidity test : 56 days, 93 % R.H., 40°C (IEC 68-2-3)
- Salt spray test : 96 hours (IEC 68-2-11)

APPROVALS

Many models within this range have full CECC approval and are marked CECC. Please consult factory for list of approved models.

12000X778 series

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

Overview

MODEL
STRUCTURE

12

SERIES

Terminals and bushings

- 1 Solder lug terminals, threaded bushing Ø 11,9 (15/32)
- 2 Straight PC terminals, threaded bushing Ø 11,9 (15/32)

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
4	ON	ON	ON
	ON	ON	MOM Δ
	MOM	ON	MOM Δ
5	ON	MOM	

Function 4

- . For 2 and 4 poles only.
- . Δ Must not have blank in "momentary" box.

Momentary

1R	ON	ON	MOM
2R	MOM	ON	MOM

- . For function 4 only.
- . Leave blank for other functions.

OPTIONS

Fluorescent tip

Blank	None
038	White fluorescent tip to lever

Levers

Blank	Standard lever
-12	Short lever

Locking levers

-1V	1 locked position
-2V	2 locked positions
-3V	3 locked positions

X778

High performance fully sealed matt black switches.

Approval

CECC

Availability :
Consult factory for details of approved models.

ABOUT THIS SERIES

On the following pages, you will find successively :

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

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



Sealing boots can be used to further protect the switches against dust and water. They are presented in section H.



Mounting accessories : standard hardware supplied with all models : 1 hex nut 14 mm (.551) across flats, part number U41. This nut is presented after model structure of switches.

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



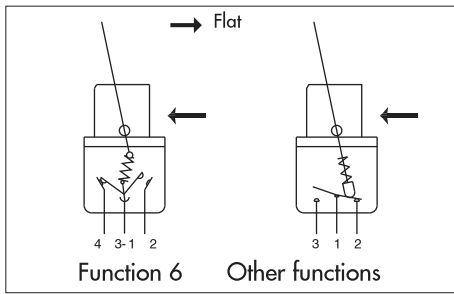
Packaging unit : 2 pole models : 25 pieces
3 and 4 pole models : 20 pieces

仅供产品选型使用 12000X778 series

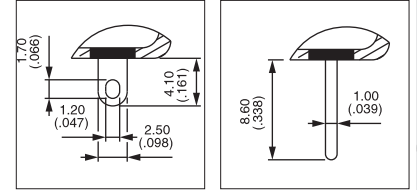
High performance toggle switches - threaded bushing Ø 11,9 (15/32)

Fully sealed - matt black

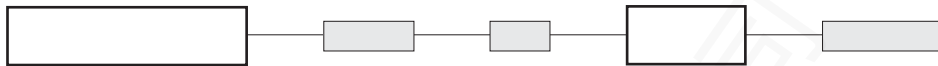
MODEL
STRUCTURE



Typical angle of throw (A)	
Function 6	24°
Functions 9, 7, 8, 4	20°
Function 5	12°



MODEL
STRUCTURE



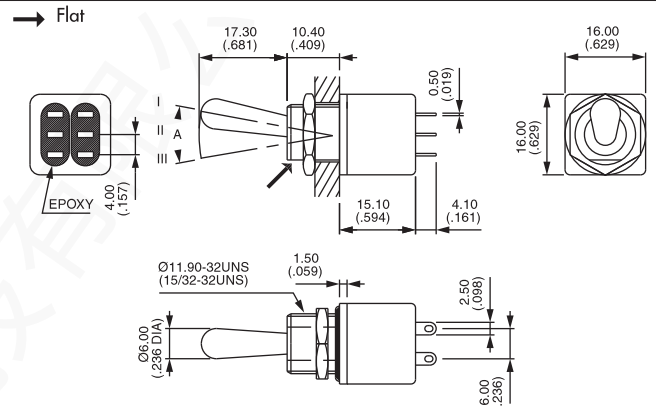
Shown with standard lever

Solder lug terminals - double pole



12146 X778
12149 X778
12147 X778
12148 X778
12144 X778
12144-1R X778
12144-2R X778
12145 X778

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

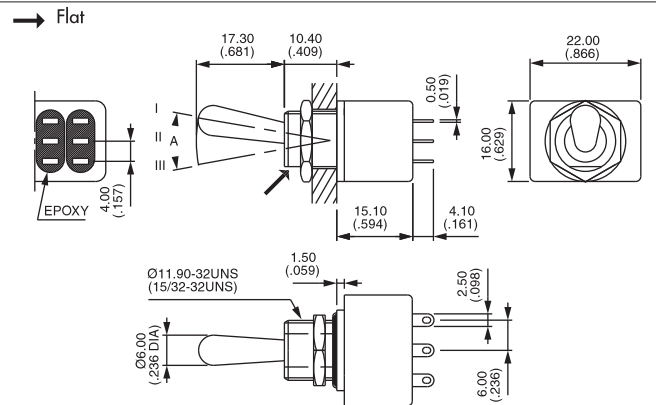


Solder lug terminals - three pole



12156 X778
12159 X778
12157 X778
12158 X778

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

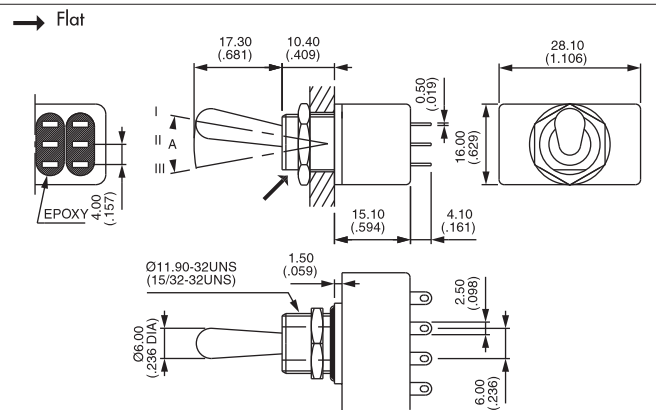


Solder lug terminals - four pole



12166 X778
12169 X778
12167 X778
12168 X778
12164 X778
12164-1R X778
12164-2R X778

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



12000X778 series

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

Fully sealed - matt black

MODEL
STRUCTURE

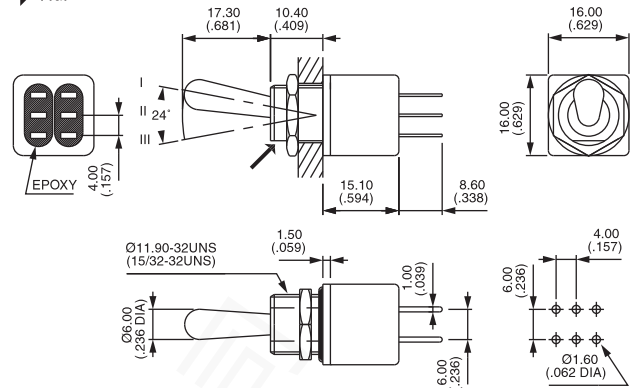
Straight PC terminals - double pole ▲



12246 X778

I II III
ON - ON

→ Flat



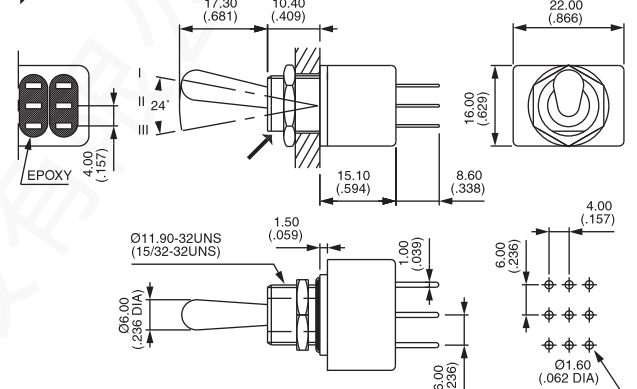
Straight PC terminals - three pole ▲



12256 X778

I II III
ON - ON

→ Flat



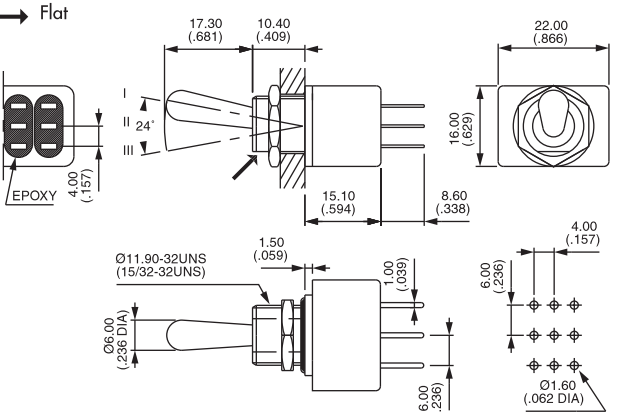
Straight PC terminals - four pole ▲



12266 X778

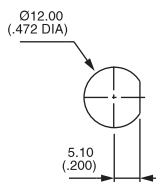
I II III
ON - ON

→ Flat



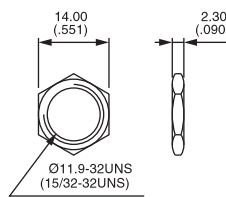
Positions and connections, see next page.

PANEL CUT-OUT



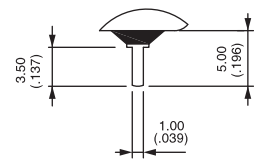
STANDARD HARDWARE

Hex nut



U41 (matt black)

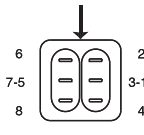
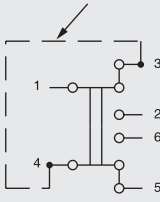
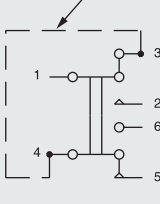
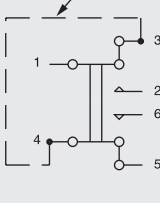
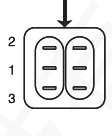
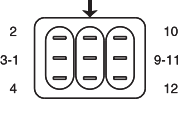
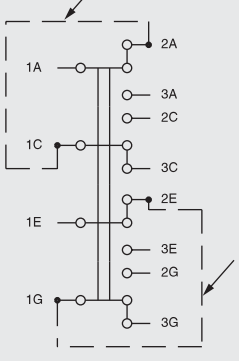
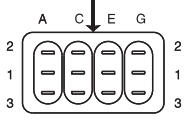
▲ 3,5 mm (.138) short terminals available for function 6, as well as for functions 9, 7, 8, 4 and 5. On request.



仅供产品选型使用 12000X778 series

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

Positions and connections

FUNCTION	LEVER POSITION AND CONNECTIONS			TERMINAL IDENTIFICATION	WIRING FOR 3-WAY SWITCHES (FUNCTION 4)
	I	II	III (Flat)		
12146	ON	-	ON		→ External jumper (added by customer)
12147 12148 12149 12148CT	MOM ON ON MOM	OFF OFF OFF OFF	MOM MOM ON ON	→ Flat	12144  12144-1R  12144-2R 
12145	-	ON	MOM		
12144 12144-1R 12144-2R	ON MOM MOM	ON ON ON	ON ON MOM		
12156	ON	-	ON		12164 
12166	ON	-	ON		
12164	ON	ON	ON		

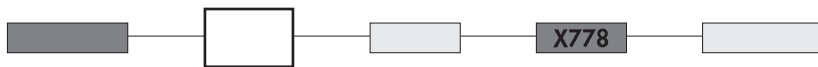
12000X778 series

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

OPTIONS



FLUORESCENT TIP

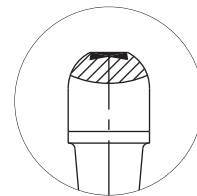
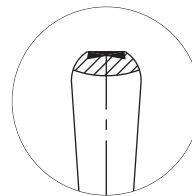


Blank None

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

Standard lever

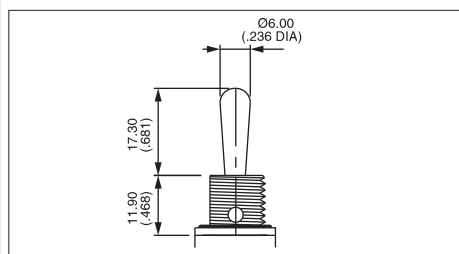
Locking lever



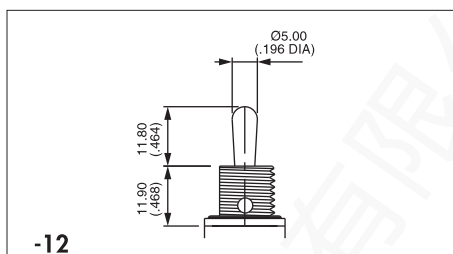
LEVERS / LOCKING LEVERS



Dash compulsory before lever code.



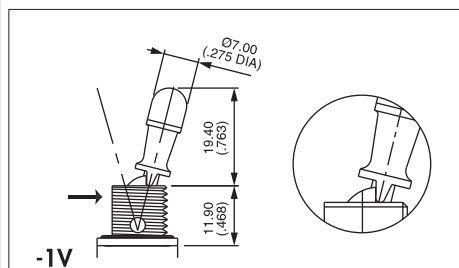
Standard lever (leave blank)



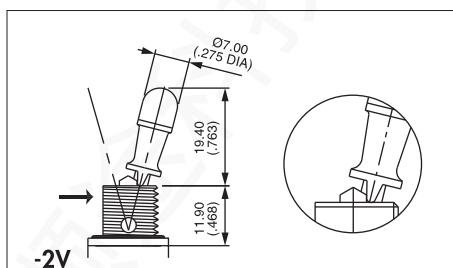
-12
Short lever

Sealing boots : see section H.
Security caps : see section I.

Locking levers

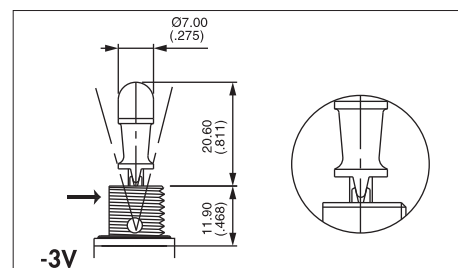


1 locked position (function 6)
Typical angle of throw : 26°

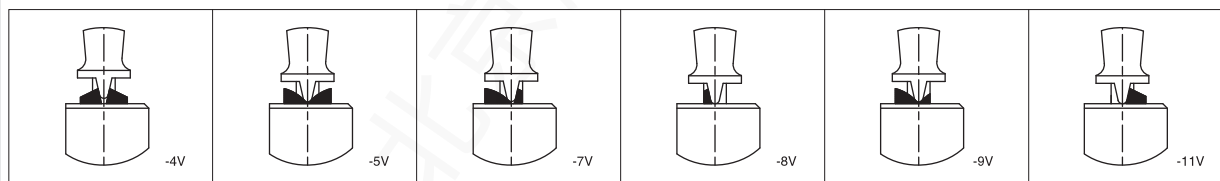


2 locked positions (function 6)
Typical angle of throw : 26°

→ Flat



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



Functions 9 & 4

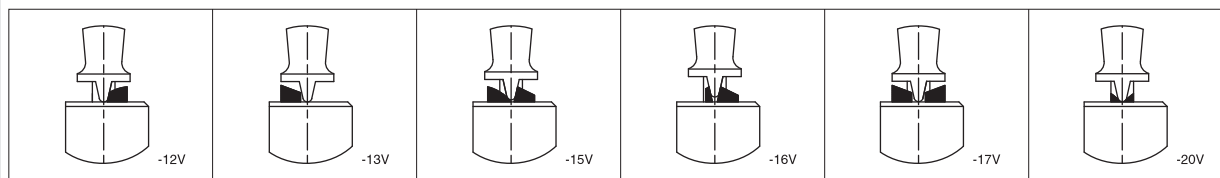
Functions 7 & 442R

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

New!

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

AGENCY APPROVAL



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For high mechanical strength and high electrical insulation.

□ Compact size

The small rear end of the switch allows space saving behind the panel.

□ Finish

Matt black finish on body, bushing, lever and hardware.

□ Sealing

Panel sealed to IP 67, these switches are frontal sealed by two O-rings and have full rear end sealing.

□ Accessories

A comprehensive range of protection boots (both full and half length), locking levers and security caps are available.

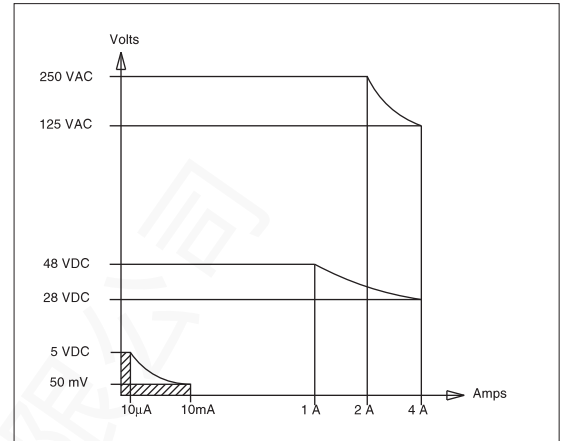
仅供产品选型使用 12000X778 series

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

Specifications

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load : 2A 250VAC - 4A 125VAC - 4A 28VDC
- Minimum load : 10mA 50mV, 10µA 5VDC
When used above 300mA 28VDC, the gold plating is removed on contact areas and is considered only as a protection against oxidation during storage.
- 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
 - 2.000 Vrms 50 Hz min. between terminals and frame
- Contact bounce : 2 ms max.
- Electrical life :
 - At 2A 250VAC - 4A 28VDC :
20.000 cycles (10.000 for functions 5, 4-1R, 4-2R)
 - At low level (50mV 10mA) :
150.000 cycles (switches with 2 maintained positions)
100.000 cycles (switches with 3 maintained positions)
50.000 cycles (momentary functions 7, 8, 4-1R, 4-2R, 5)

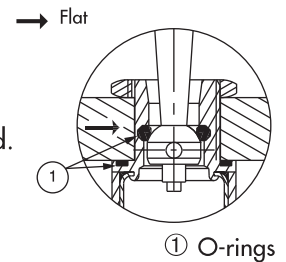


MATERIALS

- Case : diallylphthalate (DAP) with plastic external shell (epoxy sealed)
- Actuator : brass, black chrome plated
- Bushing : brass, black chrome plated
- Contacts : solid rivet - gold plated silver/nickel alloy

SEALING

- Front panel sealing by two O-rings
Flatted bush for precise orientation
- Panel seal withstands 1 bar pressure and remains sealed even when the switch is operated.
- Epoxy sealed terminals
- Splash-proof case



GENERAL SPECIFICATIONS

- Torque : 1,50 Nm (1.10 Ft.lb) max. applied to nut
- Panel thickness : 8 mm (.314) max. - 3 mm (.118) min.
- Shock test : 50g - 11ms (IEC 68-2-27)
- Vibrations : 10-500 Hz - 10g (IEC68-2-6)
- Operating temperature : -40°C to +85°C
- Humidity test : 56 days, 93 % R.H., 40°C (IEC 68-2-3)
- Salt spray test : 96 hours (IEC 68-2-11)

APPROVALS

Many models within this range have full CECC approval and are marked CECC. Please consult factory for list of approved models.

12000X778 series

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

Overview

MODEL
STRUCTURE

12

SERIES

Terminals and bushings

- 1 Solder lug terminals, threaded bushing Ø 11,9 (15/32)
- 2 Straight PC terminals, threaded bushing Ø 11,9 (15/32)

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
4	ON	ON	ON
	ON	ON	MOM Δ
	MOM	ON	MOM Δ
5	ON	MOM	

Function 4

- . For 2 and 4 poles only.
- . Δ Must not have blank in "momentary" box.

Momentary

1R	ON	ON	MOM
2R	MOM	ON	MOM

- . For function 4 only.
- . Leave blank for other functions.

OPTIONS

Fluorescent tip

Blank	None
038	White fluorescent tip to lever

Levers

Blank	Standard lever
-12	Short lever

Locking levers

-1V	1 locked position
-2V	2 locked positions
-3V	3 locked positions

X778

High performance fully sealed matt black switches.

Approval

CECC

Availability :
Consult factory for details of approved models.

ABOUT THIS SERIES

On the following pages, you will find successively :

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

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



Sealing boots can be used to further protect the switches against dust and water. They are presented in section H.



Mounting accessories : standard hardware supplied with all models : 1 hex nut 14 mm (.551) across flats, part number U41. This nut is presented after model structure of switches.

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



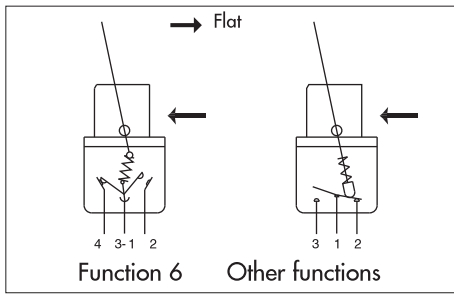
Packaging unit : 2 pole models : 25 pieces
3 and 4 pole models : 20 pieces

仅供产品选型使用 12000X778 series

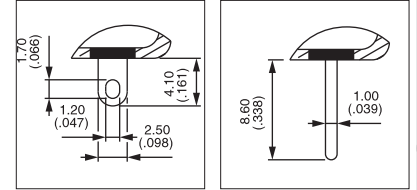
High performance toggle switches - threaded bushing Ø 11,9 (15/32)

Fully sealed - matt black

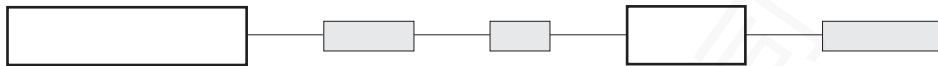
MODEL
STRUCTURE



Typical angle of throw (A)	
Function 6	24°
Functions 9, 7, 8, 4	20°
Function 5	12°



MODEL
STRUCTURE



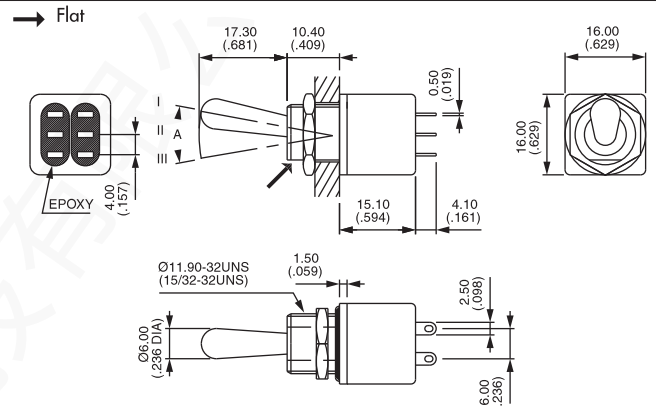
Shown with standard lever

Solder lug terminals - double pole



12146 X778
12149 X778
12147 X778
12148 X778
12144 X778
12144-1R X778
12144-2R X778
12145 X778

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

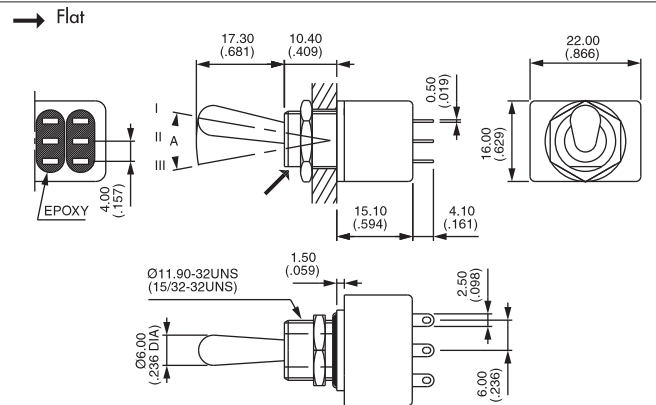


Solder lug terminals - three pole



12156 X778
12159 X778
12157 X778
12158 X778

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

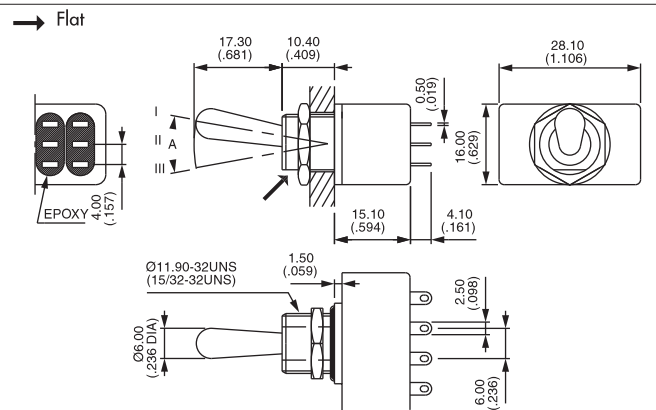


Solder lug terminals - four pole



12166 X778
12169 X778
12167 X778
12168 X778
12164 X778
12164-1R X778
12164-2R X778

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



12000X778 series

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

Fully sealed - matt black

MODEL
STRUCTURE

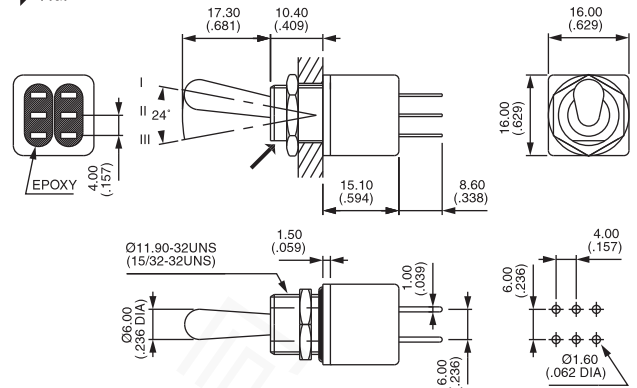
Straight PC terminals - double pole ▲



12246 X778

I II III
ON - ON

→ Flat



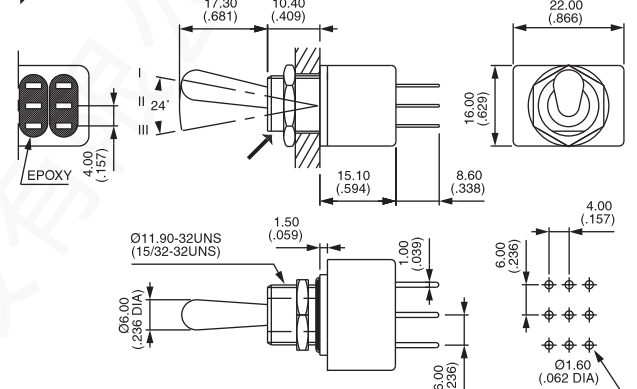
Straight PC terminals - three pole ▲



12256 X778

I II III
ON - ON

→ Flat



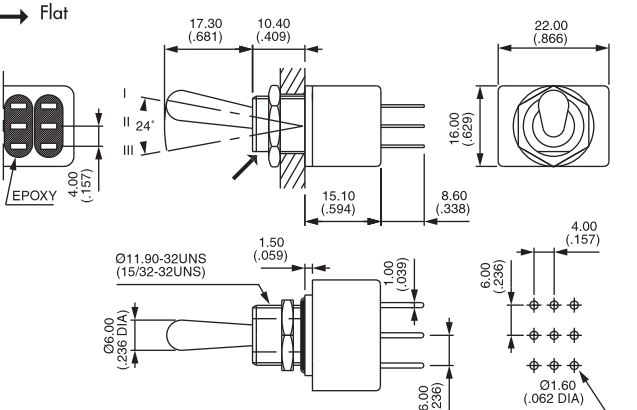
Straight PC terminals - four pole ▲



12266 X778

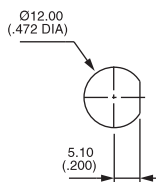
I II III
ON - ON

→ Flat



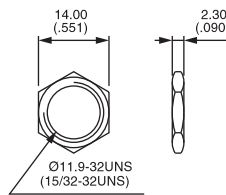
Positions and connections, see next page.

PANEL CUT-OUT



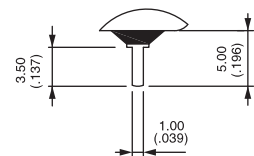
STANDARD HARDWARE

Hex nut



U41 (matt black)

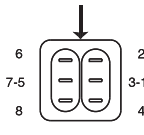
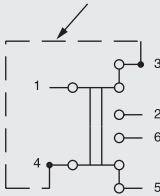
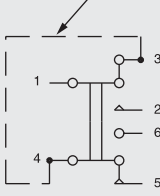
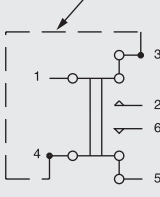
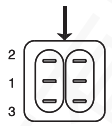
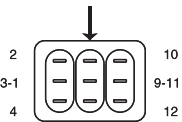
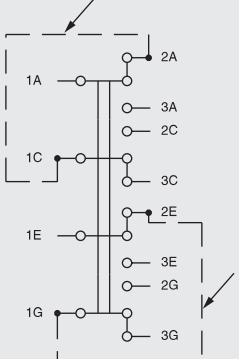
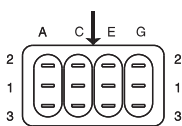
▲ 3,5 mm (.138) short terminals available for function 6, as well as for functions 9, 7, 8, 4 and 5. On request.



仅供产品选型使用 **12000X778 series**

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

Positions and connections

FUNCTION	LEVER POSITION AND CONNECTIONS			TERMINAL IDENTIFICATION	WIRING FOR 3-WAY SWITCHES (FUNCTION 4)
	I	II	III (Flat)		
12146	ON	-	ON		→ External jumper (added by customer)
12147 12148 12149 12148CT	MOM ON ON MOM	OFF OFF OFF OFF	MOM MOM ON ON	→ Flat	12144  12144-1R  12144-2R 
12145	-	ON	MOM		
12144 12144-1R 12144-2R	ON MOM MOM	ON ON ON	ON ON MOM		
	1-2 4-5	1-3 4-5	1-3 4-6		
12156	ON	-	ON		12164 
12166	ON	-	ON		
12164	ON	ON	ON		
	1A - 2A 1C - 2C 1E - 2E 1G - 2G	1A - 2A 1C - 3C 1E - 2E 1G - 3G	1A - 3A 1C - 3C 1E - 3E 1G - 3G		

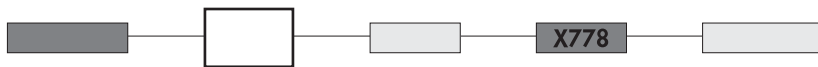
12000X778 series

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

OPTIONS



FLUORESCENT TIP

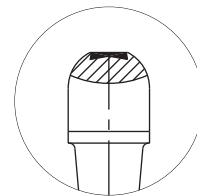
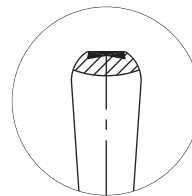


Blank None

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

Standard lever

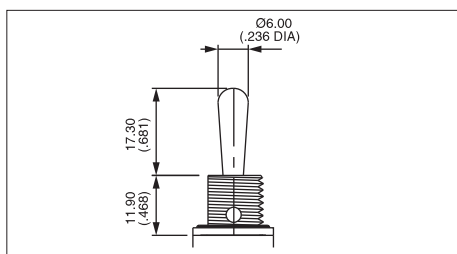
Locking lever



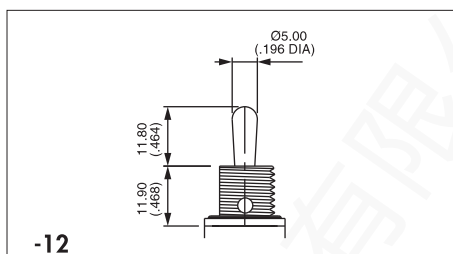
LEVERS / LOCKING LEVERS



Dash compulsory before lever code.



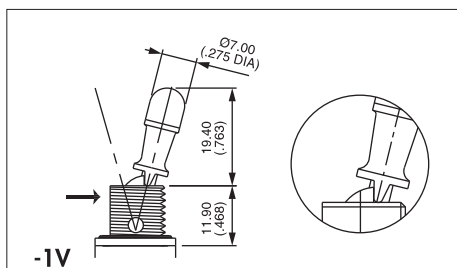
Standard lever (leave blank)



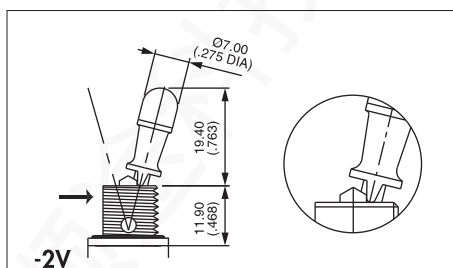
-12
Short lever

Sealing boots : see section H.
Security caps : see section I.

Locking levers

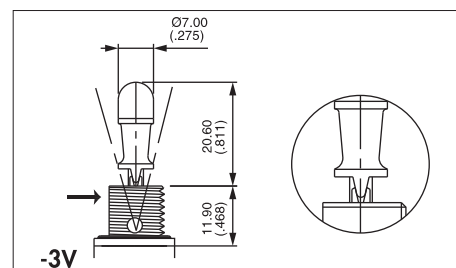


1 locked position (function 6)
Typical angle of throw : 26°

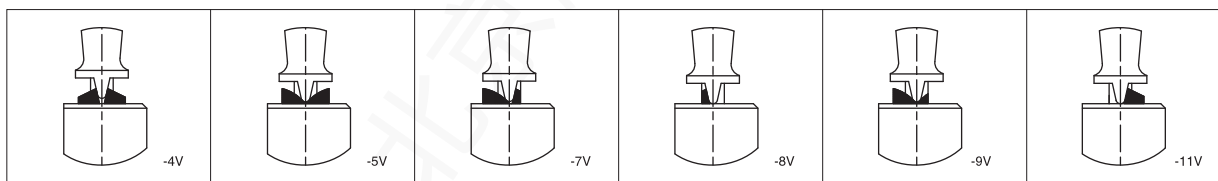


2 locked positions (function 6)
Typical angle of throw : 26°

→ Flat



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



Functions 9 & 4

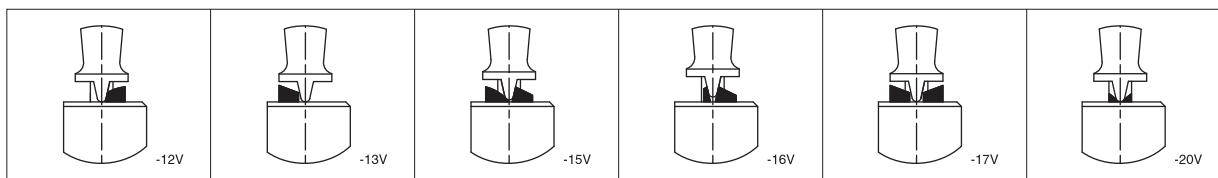
Functions 7 & 442R

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

New!

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

AGENCY APPROVAL



CECC CECC 96201-005 and CECC 96201-008

Availability : consult factory for details of approved models.

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

12000X778 series

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

Distinctive features

A



□ Approval



CECC 96201-005

CECC 96201-008

This range of professional toggle switches is suitable for use in military and other high specification environments.

□ Contacts

Highly reliable contacts suitable for low level applications (10mA 50mV - 10µA 5VDC min.) or power applications (2A 250VAC - 4A 125VAC - 4A 30VDC max.)

□ Pinned lever

The base of the switch lever is pinned to the bushing, thus earthing the lever to the bushing. This also provides strain relief to protect the switch if accidentally knocked.

□ Double shell case

For high mechanical strength and high electrical insulation.

□ Compact size

The small rear end of the switch allows space saving behind the panel.

□ Finish

Matt black finish on body, bushing, lever and hardware.

□ Sealing

Panel sealed to IP 67, these switches are frontal sealed by two O-rings and have full rear end sealing.

□ Accessories

A comprehensive range of protection boots (both full and half length), locking levers and security caps are available.

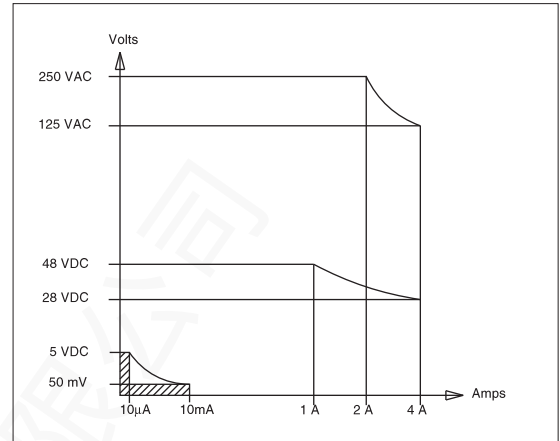
仅供产品选型使用 12000X778 series

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

Specifications

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load : 2A 250VAC - 4A 125VAC - 4A 28VDC
- Minimum load : 10mA 50mV, 10µA 5VDC
When used above 300mA 28VDC, the gold plating is removed on contact areas and is considered only as a protection against oxidation during storage.
- 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
 - 2.000 Vrms 50 Hz min. between terminals and frame
- Contact bounce : 2 ms max.
- Electrical life :
 - At 2A 250VAC - 4A 28VDC :
20.000 cycles (10.000 for functions 5, 4-1R, 4-2R)
 - At low level (50mV 10mA) :
150.000 cycles (switches with 2 maintained positions)
100.000 cycles (switches with 3 maintained positions)
50.000 cycles (momentary functions 7, 8, 4-1R, 4-2R, 5)

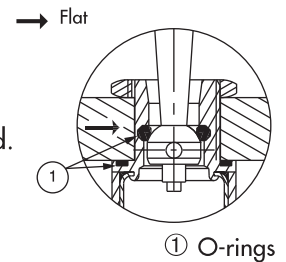


MATERIALS

- Case : diallylphthalate (DAP) with plastic external shell (epoxy sealed)
- Actuator : brass, black chrome plated
- Bushing : brass, black chrome plated
- Contacts : solid rivet - gold plated silver/nickel alloy

SEALING

- Front panel sealing by two O-rings
Flatted bush for precise orientation
- Panel seal withstands 1 bar pressure and remains sealed even when the switch is operated.
- Epoxy sealed terminals
- Splash-proof case



GENERAL SPECIFICATIONS

- Torque : 1,50 Nm (1.10 Ft.lb) max. applied to nut
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- Vibrations : 10-500 Hz - 10g (IEC68-2-6)
- Operating temperature : -40°C to +85°C
- Humidity test : 56 days, 93 % R.H., 40°C (IEC 68-2-3)
- Salt spray test : 96 hours (IEC 68-2-11)

APPROVALS

Many models within this range have full CECC approval and are marked CECC. Please consult factory for list of approved models.

12000X778 series

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

Overview

MODEL
STRUCTURE

12

SERIES

Terminals and bushings

- 1 Solder lug terminals, threaded bushing Ø 11,9 (15/32)
- 2 Straight PC terminals, threaded bushing Ø 11,9 (15/32)

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
4	ON	ON	ON
	ON	ON	MOM Δ
	MOM	ON	MOM Δ
5	ON	MOM	

Function 4

- . For 2 and 4 poles only.
- . Δ Must not have blank in "momentary" box.

Momentary

1R	ON	ON	MOM
2R	MOM	ON	MOM

- . For function 4 only.
- . Leave blank for other functions.

OPTIONS

Fluorescent tip

Blank	None
038	White fluorescent tip to lever

Levers

Blank	Standard lever
-12	Short lever

Locking levers

-1V	1 locked position
-2V	2 locked positions
-3V	3 locked positions

X778

High performance fully sealed matt black switches.

Approval

CECC

Availability :
Consult factory for details of approved models.

ABOUT THIS SERIES

On the following pages, you will find successively :

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

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



Sealing boots can be used to further protect the switches against dust and water. They are presented in section H.



Mounting accessories : standard hardware supplied with all models : 1 hex nut 14 mm (.551) across flats, part number U41. This nut is presented after model structure of switches.

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



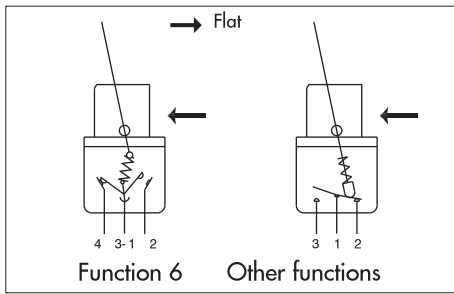
Packaging unit : 2 pole models : 25 pieces
3 and 4 pole models : 20 pieces

仅供产品选型使用 12000X778 series

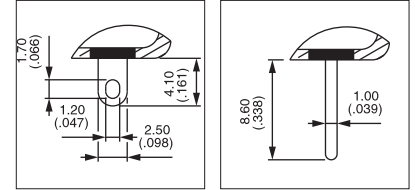
High performance toggle switches - threaded bushing Ø 11,9 (15/32)

Fully sealed - matt black

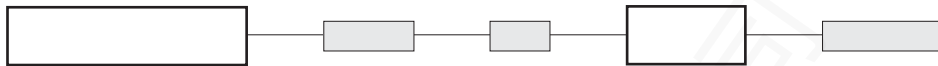
MODEL
STRUCTURE



Typical angle of throw (A)	
Function 6	24°
Functions 9, 7, 8, 4	20°
Function 5	12°



MODEL
STRUCTURE



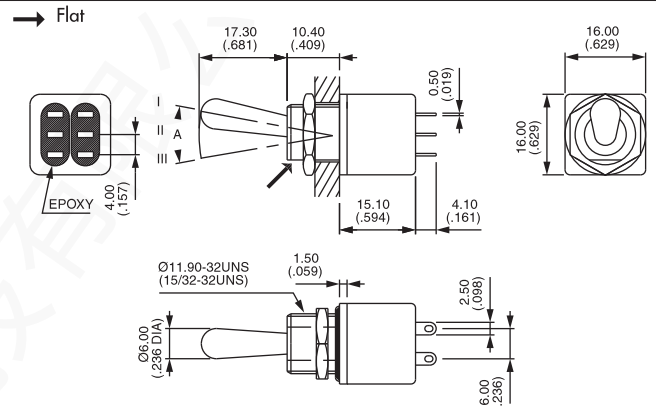
Shown with standard lever

Solder lug terminals - double pole



12146 X778
12149 X778
12147 X778
12148 X778
12144 X778
12144-1R X778
12144-2R X778
12145 X778

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

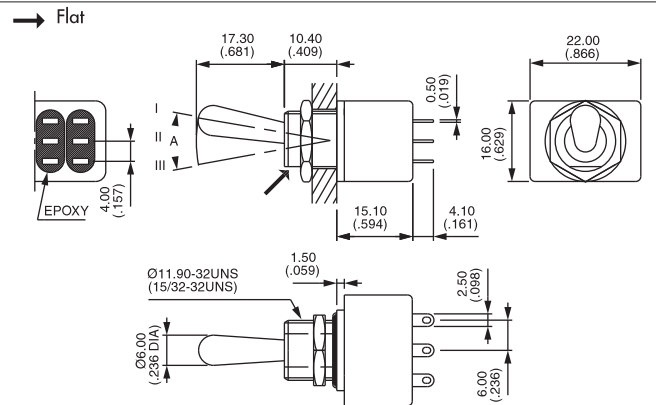


Solder lug terminals - three pole



12156 X778
12159 X778
12157 X778
12158 X778

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

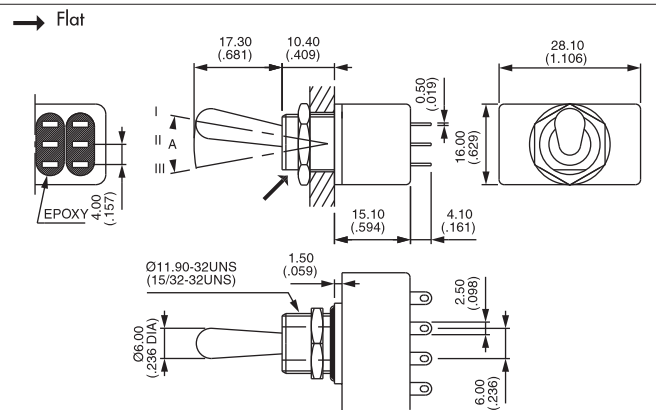


Solder lug terminals - four pole



12166 X778
12169 X778
12167 X778
12168 X778
12164 X778
12164-1R X778
12164-2R X778

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



12000X778 series

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

Fully sealed - matt black

MODEL
STRUCTURE

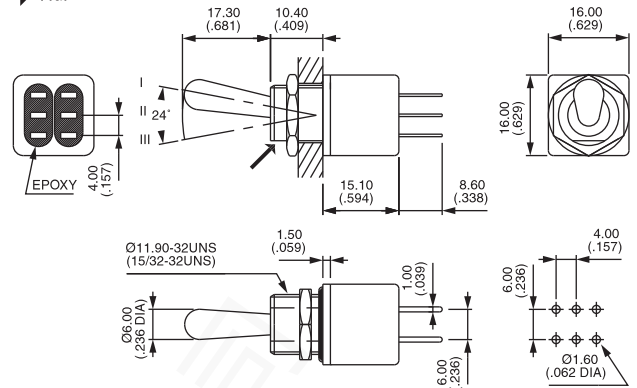
Straight PC terminals - double pole ▲



12246 X778

I II III
ON - ON

→ Flat



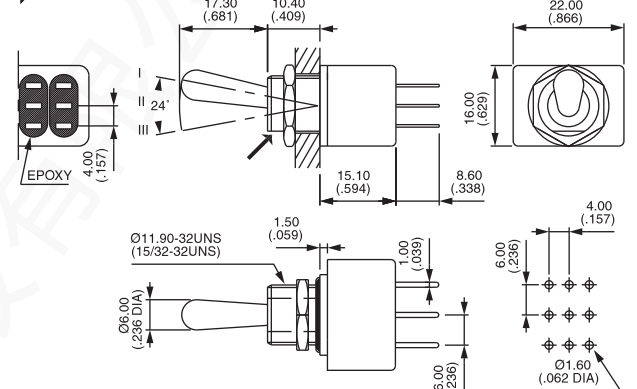
Straight PC terminals - three pole ▲



12256 X778

I II III
ON - ON

→ Flat



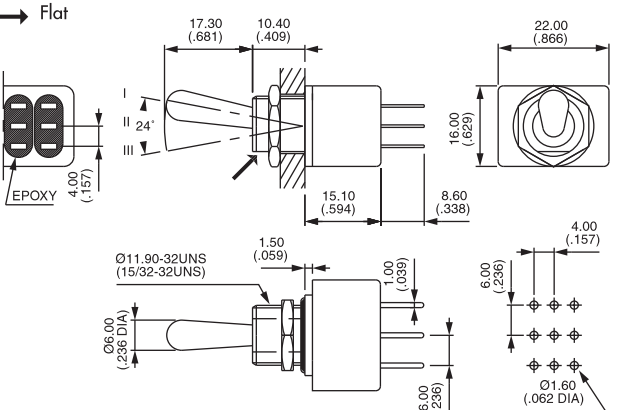
Straight PC terminals - four pole ▲



12266 X778

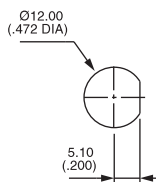
I II III
ON - ON

→ Flat



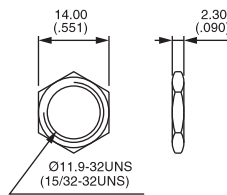
Positions and connections, see next page.

PANEL CUT-OUT



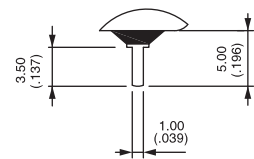
STANDARD HARDWARE

Hex nut



U41 (matt black)

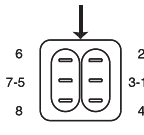
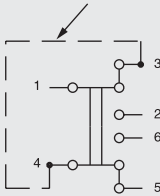
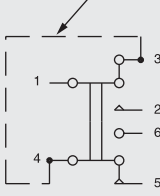
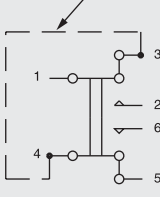
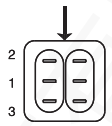
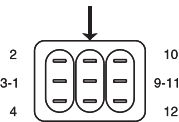
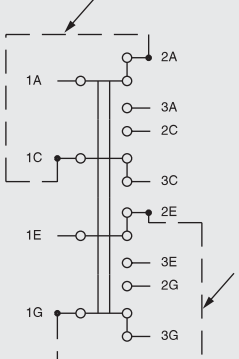
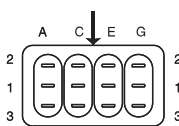
▲ 3,5 mm (.138) short terminals available for function 6, as well as for functions 7, 8, 4 and 5. On request.



仅供产品选型使用 12000X778 series

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

Positions and connections

FUNCTION	LEVER POSITION AND CONNECTIONS			TERMINAL IDENTIFICATION	WIRING FOR 3-WAY SWITCHES (FUNCTION 4)
	I	II	III (Flat)		
12146	ON	-	ON		→ External jumper (added by customer)
12147 12148 12149 12148CT	MOM ON ON MOM	OFF OFF OFF OFF	MOM MOM ON ON	→ Flat	12144  12144-1R  12144-2R 
12145	-	ON	MOM		
12144 12144-1R 12144-2R	ON MOM MOM	ON ON ON	ON ON MOM		
12156	ON	-	ON		12164 
12166	ON	-	ON		
12164	ON	ON	ON		

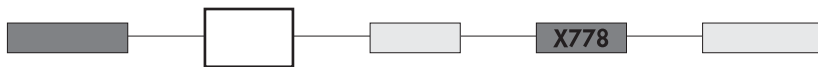
12000X778 series

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

OPTIONS



FLUORESCENT TIP

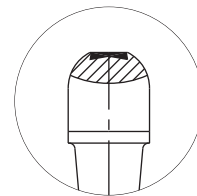
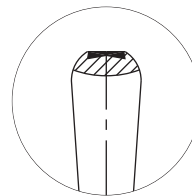


Blank None

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

Standard lever

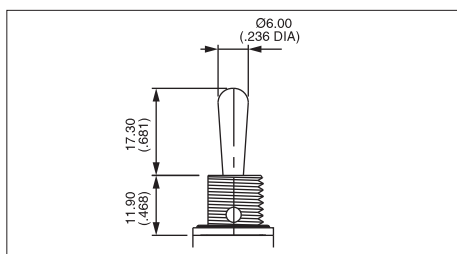
Locking lever



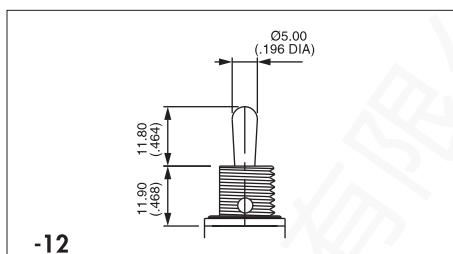
LEVERS / LOCKING LEVERS



Dash compulsory before lever code.



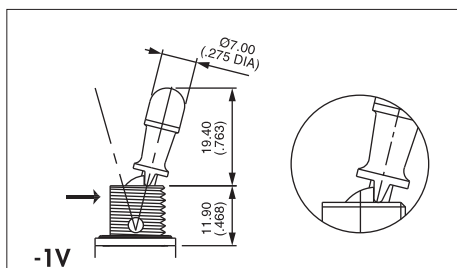
Standard lever (leave blank)



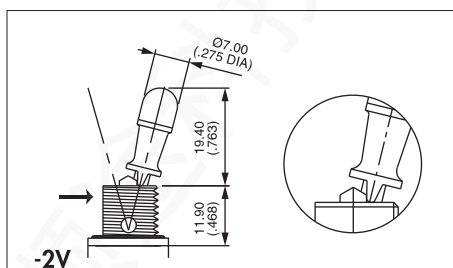
-12
Short lever

Sealing boots : see section H.
Security caps : see section I.

Locking levers

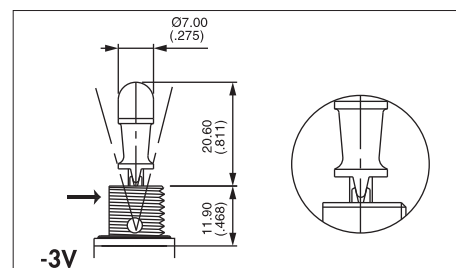


1 locked position (function 6)
Typical angle of throw : 26°

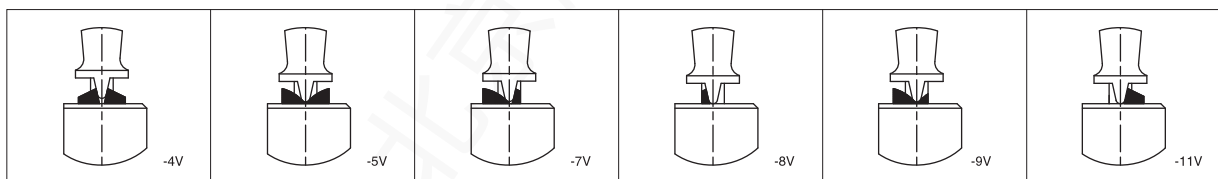


2 locked positions (function 6)
Typical angle of throw : 26°

→ Flat



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



Functions 9 & 4

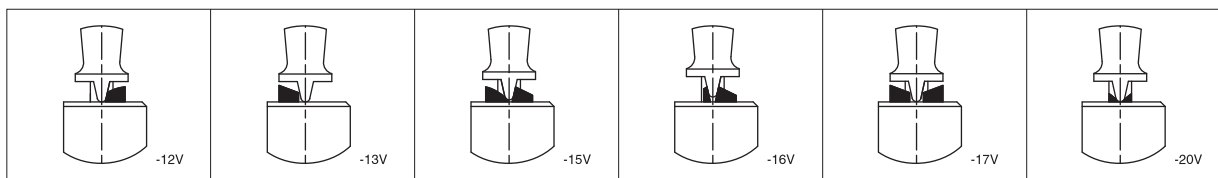
Functions 7 & 442R

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

New!

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

AGENCY APPROVAL



CECC CECC 96201-005 and CECC 96201-008

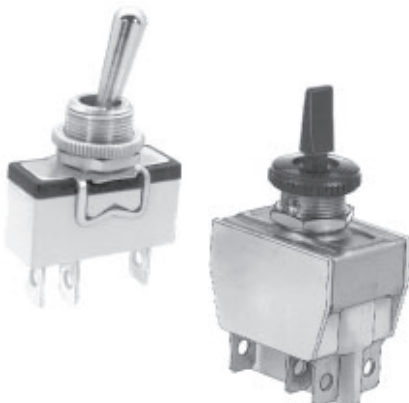
Availability : consult factory for details of approved models.

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

600H and 600NH series

Toggle switches - high amperage

Distinctive features and specifications



UG1006-A

Construction

Terminal and contact support are manufactured from a single piece of metal. The contacts are resistance-welded to the terminal for increased mechanical strength.

Rating

These switches are suitable for motor loads and power applications up to 15A 250VAC or 10A 400VAC

Metal or insulated lever

UL, CSA and NF-VDE (EN 61058-1) approved

ELECTRICAL SPECIFICATIONS

- Max. current/voltage ratings : see tables below
- Peak current : 30A max. during 1/2 sine, 250VAC
- Initial contact resistance : 10 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength :
2.000 Vrms 50 Hz min. between terminals
2.500 Vrms 50 Hz min. between terminals and frame
- Electrical life : 10.000 cycles at full load

APPROVED RATINGS

APPROVED RATINGS					
MODELS	FUNCTIONS	600H - 600NH			
		UL	CSA	NF-VDE	
		UL 1054	CSA 22-2	EN 61058-1	
Single and double pole	ON - OFF (1)	15A 1/2 HP 125-250VAC		10(4)A 400VAC T 85/55 (600H)	
	ON - ON (6)				
	Other (4-5-7-8-9)	10A 1/2 HP 125-250VAC			
Three pole	ON - OFF (1) & ON - ON (6)	15A 1/2 HP 125-250VAC			T 125/55 (600NH)
	Other (4-5-7-8-9)	10A 1/2 HP 125-250VAC			

- FOR INFORMATION-

Max. current/voltage rating w. resistive load

Functions	Ratings	Electrical life
ON - OFF ON - ON	15A 250VAC 10A 24VDC 15A 12VDC	10.000 cycles
ON OFF ON	15A 250VAC	6.000 cycles
Other	15A 125VAC 12A 250VAC 5A 25VDC	10.000 cycles

MATERIALS

- Case : polyester UL94-V0
- Actuator :
- 600H : brass, nickel plated
- 600NH : black polyamide
- Bushing : brass, nickel plated
- Contacts : silver/nickel alloy

GENERAL SPECIFICATIONS

- Torque : 1,50 Nm (1.10 Ft.lb) max. applied to nut
- Panel thickness : 4,5 mm (.177) max. between 2 nuts
- Operating temperature : -20°C to +55°C

仅供产品选型使用 600H and 600NH series

Toggle switches - high amperage

Specifications

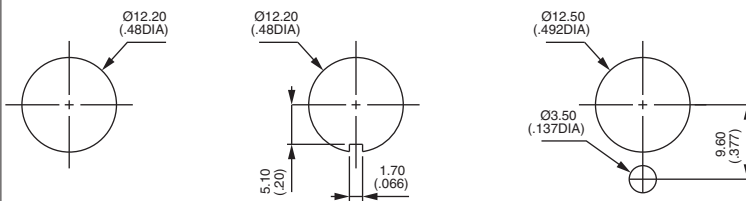
AGENCY APPROVALS



Availability : see chart on previous page.

Marking : approved models are standard marked.

PANEL CUT-OUT



MOUNTING RECOMMENDATIONS

Connection

- For quick-connect terminals, use 6,3 x 0,8 mm normalized female connectors.
- For screw terminals, use :
either 1,5 mm² or 2,5 mm² rigid wires,
or prepared stripped and tin plated flexible wires,
or prepared flexible wires with crimped termination per EN 50027 (DIN 46228)

Ground connector

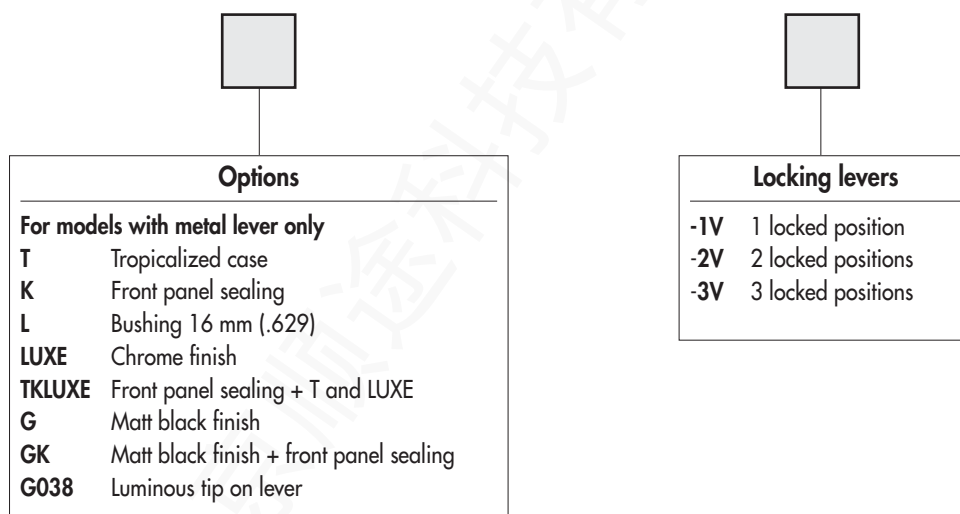
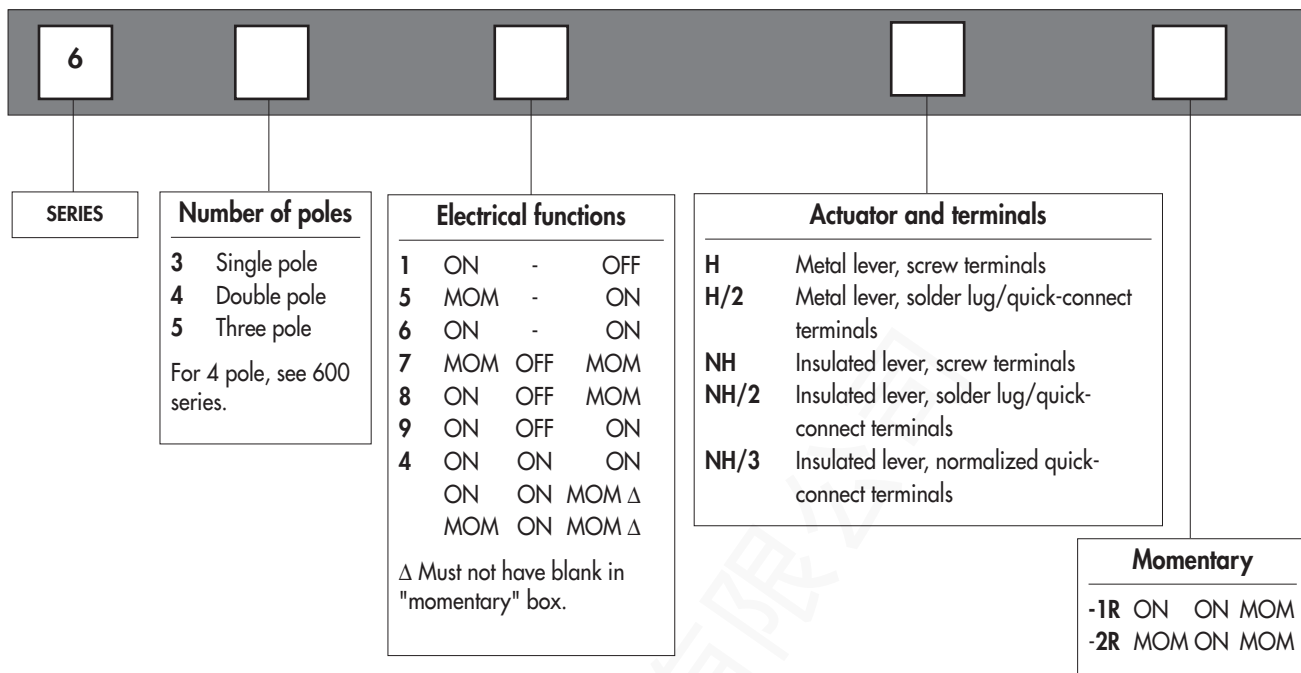
Compulsory if the panel is not metallic or not connected to ground. Should also be used when front face nut is of plastic material.

Order separately, see section I.

600H and 600NH series

Toggle switches - high amperage

Overview



ABOUT THIS SERIES

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



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

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



Sealing boots are available on 600H series to protect the switches against dust and water. They are presented in section H.



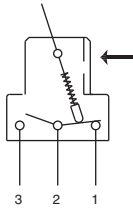
Mounting accessories : standard hardware supplied with all models :

- 600H and series : 1 hex nut U166 and 1 knurled nut U411
 - 600NH series : 1 hex nut U166 and 1 knurled nut U522
- Standard and special hardware are presented in section I.



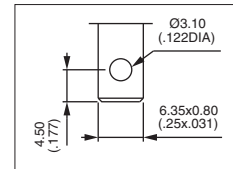
Packaging unit : 25 pieces.

→ Keyway

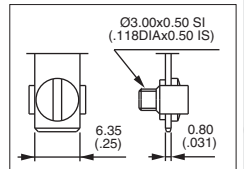


- 2 and 3 maintained or momentary positions
- Solder lug/quick-connect terminals 6,35 x 0,8 (.250 x .031) or screw terminals + clamp
- 1, 2 and 3 pole configurations
- Normalized quick-connect terminals (/3) optional. On request.

600H/2



600H



MODEL
STRUCTURE



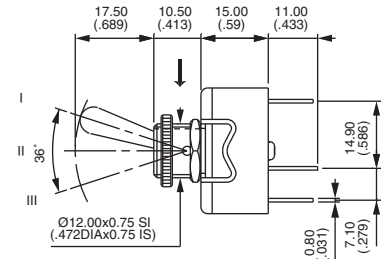
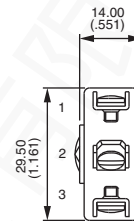
Single pole

→ Keyway



Solder lug	Screw term.
631H/2	631H
635H/2	635H
636H/2	636H
637H/2	637H
638H/2	638H
639H/2	639H

III	II	I
2-1		2-3
ON	-	OFF
MOM	-	ON
ON	-	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	OFF	ON



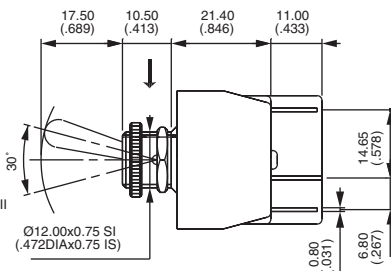
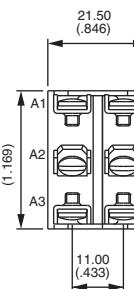
Double pole

→ Keyway



Solder lug	Screw term.
641H/2	641H
644H/2	644H*
644H/2-1R	644H-1R*
644H/2-2R	644H-2R*
645H/2	645H
646H/2	646H
647H/2	647H
648H/2	648H
649H/2	649H

III	II	I
2-1		2-3
5-4		5-6
ON	-	OFF
ON	ON	ON
ON	ON	MOM
MOM	ON	MOM
MOM	-	ON
ON	-	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	OFF	ON



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

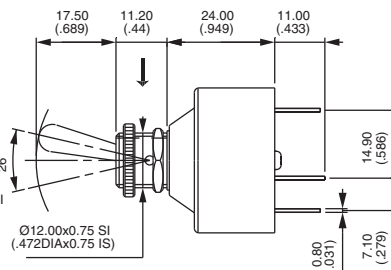
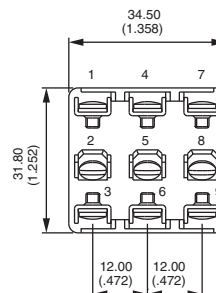
Three pole

→ Keyway



Solder lug	Screw term.
651H/2	651H
655H/2	655H
656H/2	656H
657H/2	657H
658H/2	658H
659H/2	659H

III	II	I
2-1		2-3
5-4		5-6
8-7		8-9
ON	-	OFF
MOM	-	ON
ON	-	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	OFF	ON



600H series

Toggle switches - high amperage - metal lever

OPTIONS

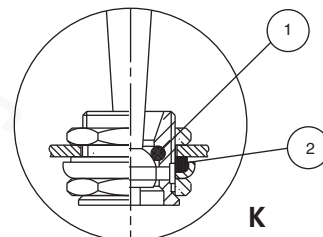


OPTIONS FOR 600H SERIES ONLY

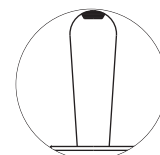


Complete above box with desired options in the same order as below

- T** Tropicalized diallylphthalate case (-40°C to +85°C)
- K** Front panel sealing by 1 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
- L** Special threaded bushing, length 16 mm (.629)
- LUXE** Chrome plated lever and cap nut U117
- TK LUXE** Options T, K and LUXE.
- G** Matt black finish on bushing, lever and nuts.
Includes tropicalization (option T)
- GK** Front panel sealing by O-ring and sealing washer (as described in option TK LUXE)
+ option G
- G038** Option G + fluorescent tip on lever.
White fluorescent tip becomes luminous when submitted to ultra violet rays.



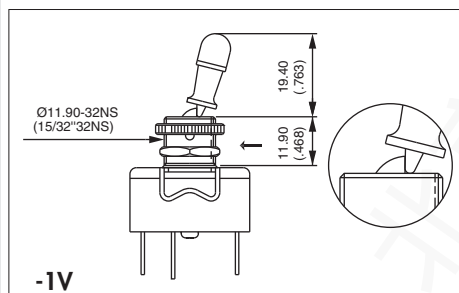
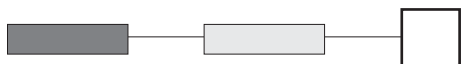
① O-ring ② Sealing washer



038

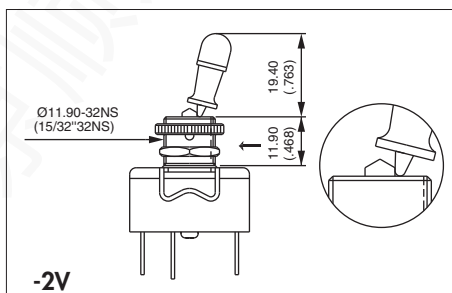
LOCKING LEVERS (1 and 2 pole models)

For 3-pole models, refer to 6000 series.



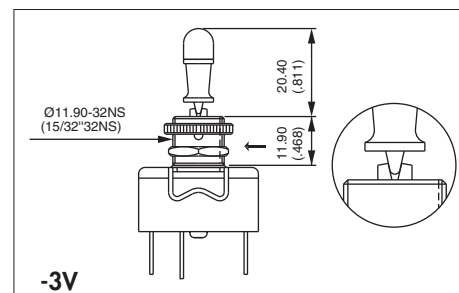
-1V

1 locked position



-2V

2 locked positions



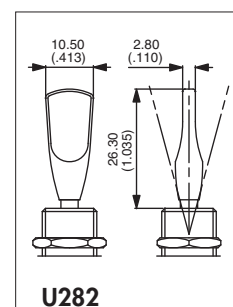
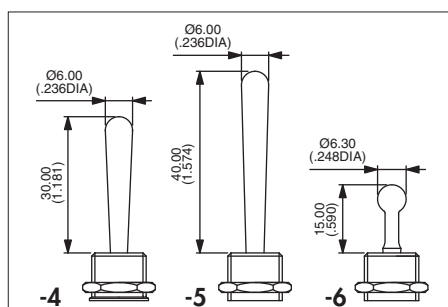
-3V

3 locked positions

→ Keyway

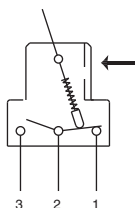
ACTUATOR OPTIONS (1 and 2 pole models)

- 4** 30 mm (1.181) long actuator
- 5** 40 mm (1.574) long actuator
- 6** Retro style actuator
(gold plated or chrome plated : on request)
- Ergonomic flat plastic actuator : add U282 at the end of switch model number.



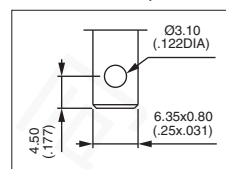
U282

→ Keyway

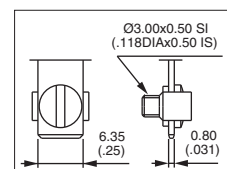


- 2 and 3 maintained or momentary positions
- Solder lug/quick-connect terminals 6,35 x 0,8 (.250 x .031) or screw terminals + clamp
- 1, 2 and 3 pole configurations
- Normalized quick-connect terminals (/3) optional. On request.

600NH/2



600NH



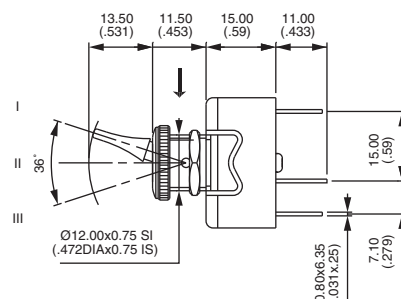
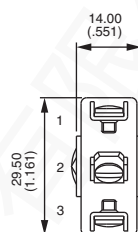
Single pole



Solder lug	Screw term.
631NH/2	631NH
635NH/2	635NH
636NH/2	636NH
637NH/2	637NH
638NH/2	638NH
639NH/2	639NH

III	II	I
2-1		2-3
ON	-	OFF
MOM	-	ON
ON	-	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	OFF	ON

→ Keyway



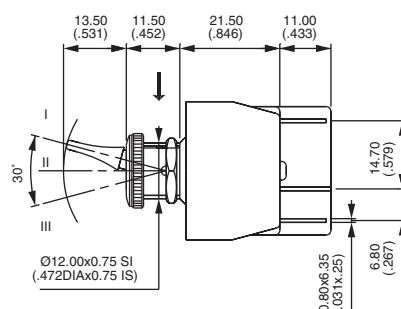
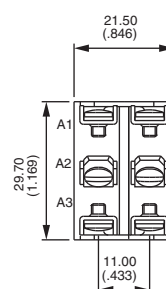
Double pole



Solder lug	Screw term.
641NH/2	641NH
644NH/2	644NH
644NH/2-1R	644NH-1R*
644NH/2-2R	644NH-2R*
645NH/2	645NH
646NH/2	646NH
647NH/2	647NH
648NH/2	648NH
649NH/2	649NH

III	II	I
2-1		2-3
5-4		5-6
ON	-	OFF
ON	ON	ON
ON	ON	MOM
MOM	ON	MOM
MOM	-	ON
ON	-	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	OFF	ON

→ Keyway



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

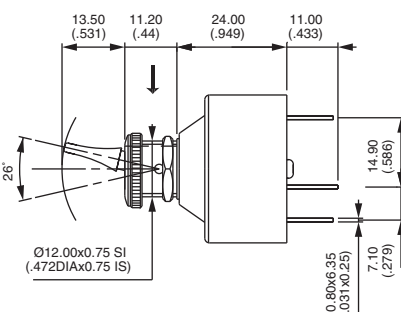
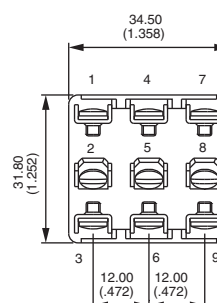
Three pole



Solder lug	Screw term.
651NH/2	651NH
655NH/2	655NH
656NH/2	656NH
657NH/2	657NH
658NH/2	658NH
659NH/2	659NH

III	II	I
2-1		2-3
5-4		5-6
8-7		8-9
ON	-	OFF
MOM	-	ON
ON	-	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	OFF	ON

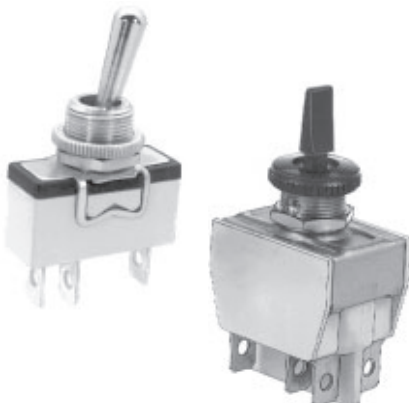
→ Keyway



600H and 600NH series

Toggle switches - high amperage

Distinctive features and specifications



UG1006-A

Construction

Terminal and contact support are manufactured from a single piece of metal. The contacts are resistance-welded to the terminal for increased mechanical strength.

Rating

These switches are suitable for motor loads and power applications up to 15A 250VAC or 10A 400VAC

Metal or insulated lever

UL, CSA and NF-VDE (EN 61058-1) approved

ELECTRICAL SPECIFICATIONS

- Max. current/voltage ratings : see tables below
- Peak current : 30A max. during 1/2 sine, 250VAC
- Initial contact resistance : 10 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength :
2.000 Vrms 50 Hz min. between terminals
2.500 Vrms 50 Hz min. between terminals and frame
- Electrical life : 10.000 cycles at full load

APPROVED RATINGS

APPROVED RATINGS					
MODELS	FUNCTIONS	600H - 600NH			
		UL	CSA	NF-VDE	
		UL 1054	CSA 22-2	EN 61058-1	
Single and double pole	ON - OFF (1)	15A 1/2 HP 125-250VAC		10(4)A 400VAC T 85/55 (600H)	
	ON - ON (6)				
	Other (4-5-7-8-9)	10A 1/2 HP 125-250VAC			
Three pole	ON - OFF (1) & ON - ON (6)	15A 1/2 HP 125-250VAC			T 125/55 (600NH)
	Other (4-5-7-8-9)	10A 1/2 HP 125-250VAC			

- FOR INFORMATION-

Max. current/voltage rating w. resistive load

Functions	Ratings	Electrical life
ON - OFF ON - ON	15A 250VAC 10A 24VDC 15A 12VDC	10.000 cycles
ON OFF ON	15A 250VAC	6.000 cycles
Other	15A 125VAC 12A 250VAC 5A 25VDC	10.000 cycles

MATERIALS

- Case : polyester UL94-V0
- Actuator :
- 600H : brass, nickel plated
- 600NH : black polyamide
- Bushing : brass, nickel plated
- Contacts : silver/nickel alloy

GENERAL SPECIFICATIONS

- Torque : 1,50 Nm (1.10 Ft.lb) max. applied to nut
- Panel thickness : 4,5 mm (.177) max. between 2 nuts
- Operating temperature : -20°C to +55°C

仅供产品选型使用 600H and 600NH series

Toggle switches - high amperage

Specifications

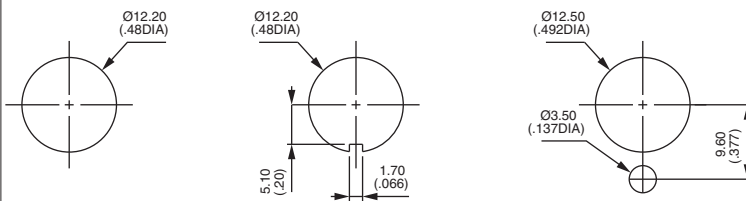
AGENCY APPROVALS



Availability : see chart on previous page.

Marking : approved models are standard marked.

PANEL CUT-OUT



MOUNTING RECOMMENDATIONS

Connection

- For quick-connect terminals, use 6,3 x 0,8 mm normalized female connectors.
- For screw terminals, use :
 - either 1,5 mm² or 2,5 mm² rigid wires,
 - or prepared stripped and tin plated flexible wires,
 - or prepared flexible wires with crimped termination per EN 50027 (DIN 46228)

Ground connector

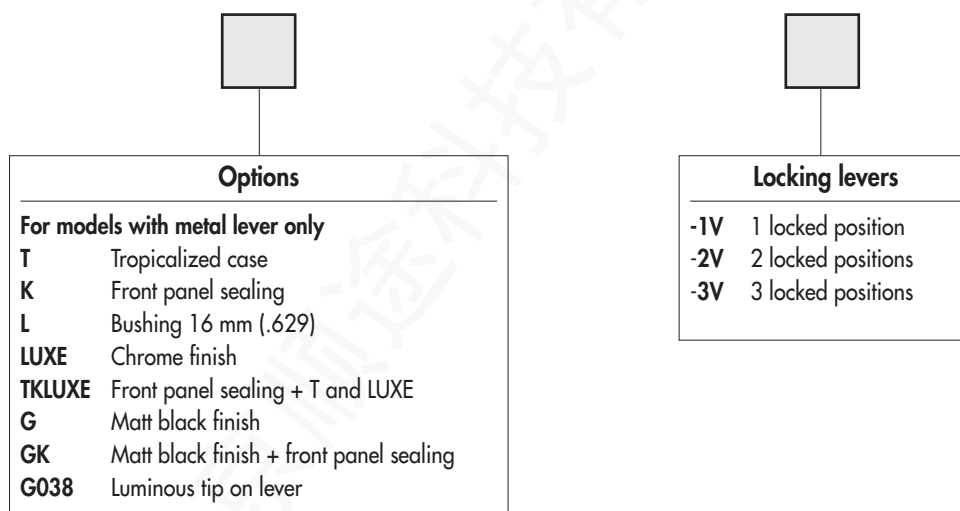
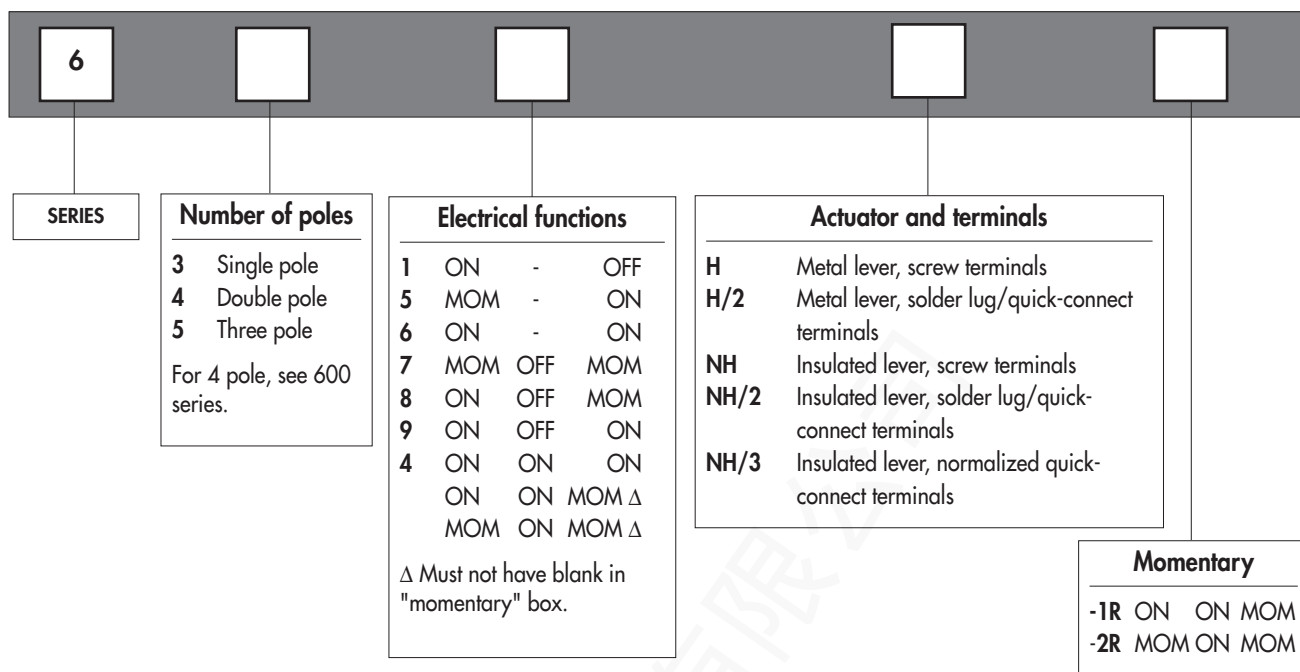
Compulsory if the panel is not metallic or not connected to ground. Should also be used when front face nut is of plastic material.

Order separately, see section I.

600H and 600NH series

Toggle switches - high amperage

Overview



ABOUT THIS SERIES

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



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

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



Sealing boots are available on 600H series to protect the switches against dust and water. They are presented in section H.



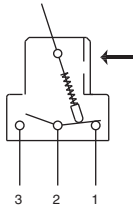
Mounting accessories : standard hardware supplied with all models :

- 600H and series : 1 hex nut U166 and 1 knurled nut U411
 - 600NH series : 1 hex nut U166 and 1 knurled nut U522
- Standard and special hardware are presented in section I.



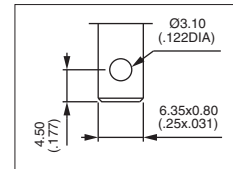
Packaging unit : 25 pieces.

→ Keyway

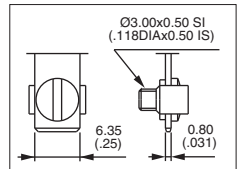


- 2 and 3 maintained or momentary positions
- Solder lug/quick-connect terminals 6,35 x 0,8 (.250 x .031) or screw terminals + clamp
- 1, 2 and 3 pole configurations
- Normalized quick-connect terminals (/3) optional. On request.

600H/2



600H



MODEL
STRUCTURE



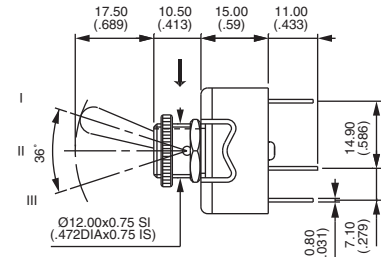
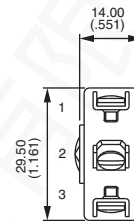
Single pole

→ Keyway



Solder lug	Screw term.
631H/2	631H
635H/2	635H
636H/2	636H
637H/2	637H
638H/2	638H
639H/2	639H

III	II	I
2-1		2-3
ON	-	OFF
MOM	-	ON
ON	-	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	OFF	ON



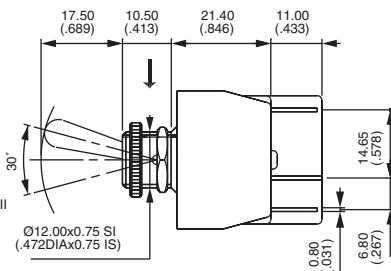
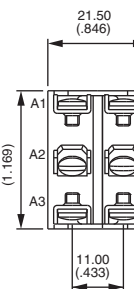
Double pole

→ Keyway



Solder lug	Screw term.
641H/2	641H
644H/2	644H*
644H/2-1R	644H-1R*
644H/2-2R	644H-2R*
645H/2	645H
646H/2	646H
647H/2	647H
648H/2	648H
649H/2	649H

III	II	I
2-1		2-3
5-4		5-6
ON	-	OFF
ON	ON	ON
ON	ON	MOM
MOM	ON	MOM
MOM	-	ON
ON	-	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	OFF	ON



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

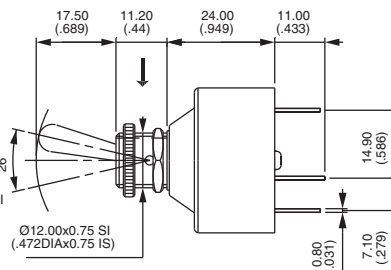
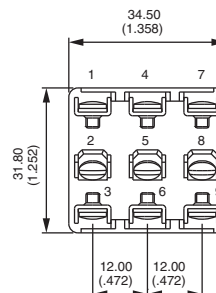
Three pole

→ Keyway



Solder lug	Screw term.
651H/2	651H
655H/2	655H
656H/2	656H
657H/2	657H
658H/2	658H
659H/2	659H

III	II	I
2-1		2-3
5-4		5-6
8-7		8-9
ON	-	OFF
MOM	-	ON
ON	-	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	OFF	ON



600H series

Toggle switches - high amperage - metal lever

OPTIONS

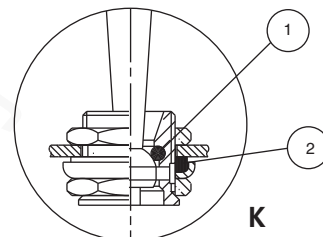


OPTIONS FOR 600H SERIES ONLY

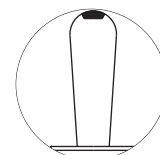


Complete above box with desired options in the same order as below

- T** Tropicalized diallylphthalate case (-40°C to +85°C)
- K** Front panel sealing by 1 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
- L** Special threaded bushing, length 16 mm (.629)
- LUXE** Chrome plated lever and cap nut U117
- TK LUXE** Options T, K and LUXE.
- G** Matt black finish on bushing, lever and nuts.
Includes tropicalization (option T)
- GK** Front panel sealing by O-ring and sealing washer (as described in option TK LUXE)
+ option G
- G038** Option G + fluorescent tip on lever.
White fluorescent tip becomes luminous when submitted to ultra violet rays.



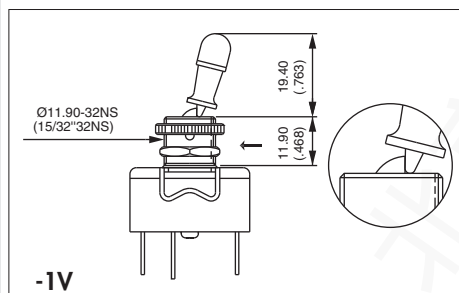
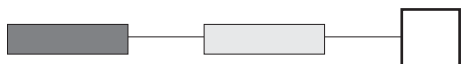
① O-ring ② Sealing washer



038

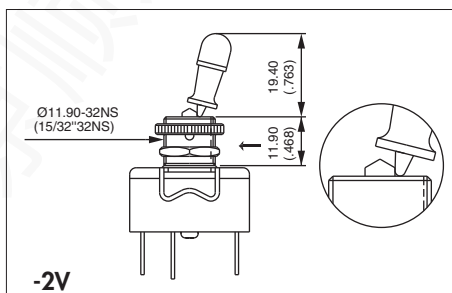
LOCKING LEVERS (1 and 2 pole models)

For 3-pole models, refer to 6000 series.



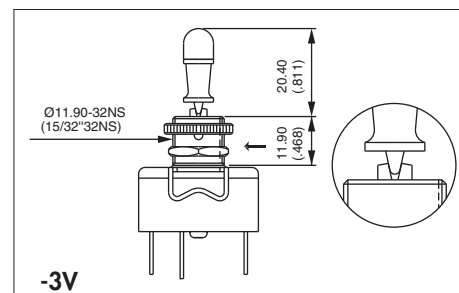
-1V

1 locked position



-2V

2 locked positions



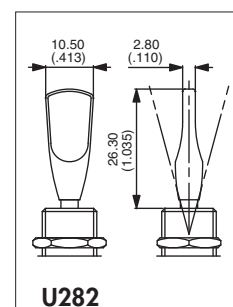
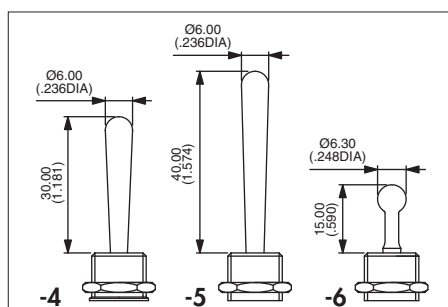
-3V

3 locked positions

→ Keyway

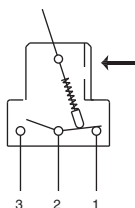
ACTUATOR OPTIONS (1 and 2 pole models)

- 4** 30 mm (1.181) long actuator
- 5** 40 mm (1.574) long actuator
- 6** Retro style actuator
(gold plated or chrome plated : on request)
- Ergonomic flat plastic actuator : add U282 at the end of switch model number.



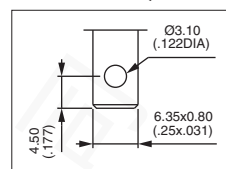
U282

→ Keyway

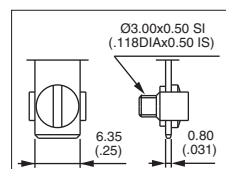


- 2 and 3 maintained or momentary positions
- Solder lug/quick-connect terminals 6,35 x 0,8 (.250 x .031) or screw terminals + clamp
- 1, 2 and 3 pole configurations
- Normalized quick-connect terminals (/3) optional. On request.

600NH/2



600NH



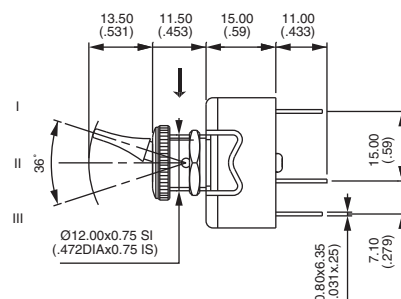
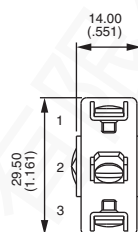
Single pole

→ Keyway



Solder lug	Screw term.	III	II	I
631NH/2	631NH	2-1		2-3
635NH/2	635NH			
636NH/2	636NH			
637NH/2	637NH			
638NH/2	638NH			
639NH/2	639NH			

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



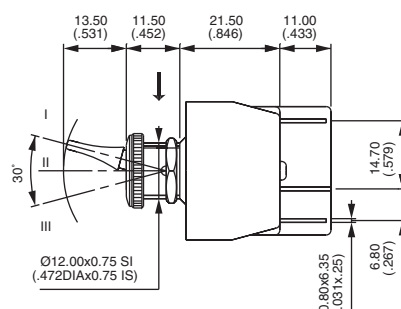
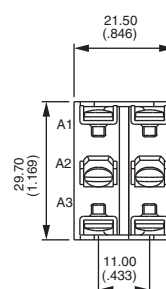
Double pole

→ Keyway



Solder lug	Screw term.	III	II	I
641NH/2	641NH	2-1		2-3
644NH/2	644NH	5-4		5-6
644NH/2-1R	644NH-1R*			
644NH/2-2R	644NH-2R*			
645NH/2	645NH			
646NH/2	646NH			
647NH/2	647NH			
648NH/2	648NH			
649NH/2	649NH			

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



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

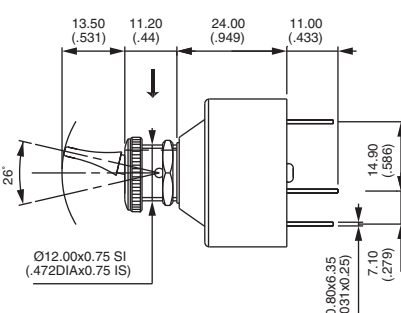
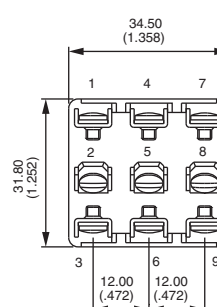
Three pole

→ Keyway



Solder lug	Screw term.	III	II	I
651NH/2	651NH	2-1		2-3
655NH/2	655NH	5-4		5-6
656NH/2	656NH	8-7		8-9
657NH/2	657NH			
658NH/2	658NH			
659NH/2	659NH			

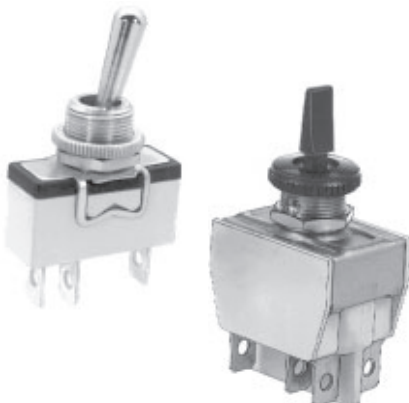
ON	-	OFF
MOM	-	ON
ON	-	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	OFF	ON



600H and 600NH series

Toggle switches - high amperage

Distinctive features and specifications



UG1006-A

Construction

Terminal and contact support are manufactured from a single piece of metal. The contacts are resistance-welded to the terminal for increased mechanical strength.

Rating

These switches are suitable for motor loads and power applications up to 15A 250VAC or 10A 400VAC

Metal or insulated lever

UL, CSA and NF-VDE (EN 61058-1) approved

ELECTRICAL SPECIFICATIONS

- Max. current/voltage ratings : see tables below
- Peak current : 30A max. during 1/2 sine, 250VAC
- Initial contact resistance : 10 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength :
2.000 Vrms 50 Hz min. between terminals
2.500 Vrms 50 Hz min. between terminals and frame
- Electrical life : 10.000 cycles at full load

APPROVED RATINGS

MODELS	FUNCTIONS	600H - 600NH		
		UL	CSA	NF-VDE
		UL 1054	CSA 22-2	EN 61058-1
Single and double pole	ON - OFF (1)	15A 1/2 HP 125-250VAC		10(4)A 400VAC
	ON - ON (6)			
	Other (4-5-7-8-9)	10A 1/2 HP 125-250VAC		T 85/55 (600H)
Three pole	ON - OFF (1) & ON - ON (6)	15A 1/2 HP 125-250VAC		T 125/55 (600NH)
	Other (4-5-7-8-9)	10A 1/2 HP 125-250VAC		

- FOR INFORMATION-

Max. current/voltage rating w. resistive load

Functions	Ratings	Electrical life
ON - OFF ON - ON	15A 250VAC 10A 24VDC 15A 12VDC	10.000 cycles
ON OFF ON	15A 250VAC	6.000 cycles
Other	15A 125VAC 12A 250VAC 5A 25VDC	10.000 cycles

MATERIALS

- Case : polyester UL94-V0
- Actuator :
- 600H : brass, nickel plated
- 600NH : black polyamide
- Bushing : brass, nickel plated
- Contacts : silver/nickel alloy

GENERAL SPECIFICATIONS

- Torque : 1,50 Nm (1.10 Ft.lb) max. applied to nut
- Panel thickness : 4,5 mm (.177) max. between 2 nuts
- Operating temperature : -20°C to +55°C

仅供产品选型使用 600H and 600NH series

Toggle switches - high amperage

Specifications

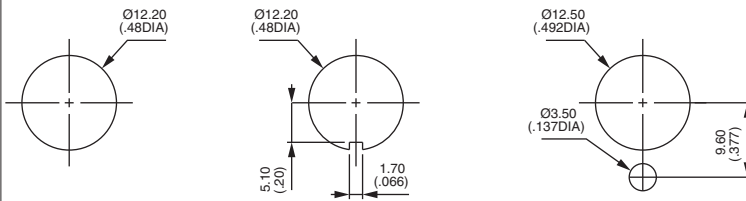
AGENCY APPROVALS



Availability : see chart on previous page.

Marking : approved models are standard marked.

PANEL CUT-OUT



MOUNTING RECOMMENDATIONS

Connection

- For quick-connect terminals, use 6,3 x 0,8 mm normalized female connectors.
- For screw terminals, use :
 - either 1,5 mm² or 2,5 mm² rigid wires,
 - or prepared stripped and tin plated flexible wires,
 - or prepared flexible wires with crimped termination per EN 50027 (DIN 46228)

Ground connector

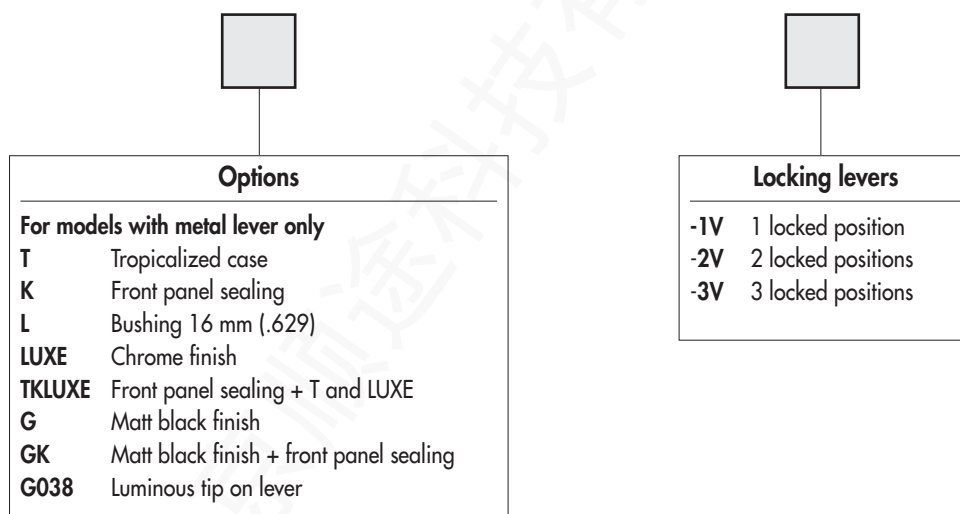
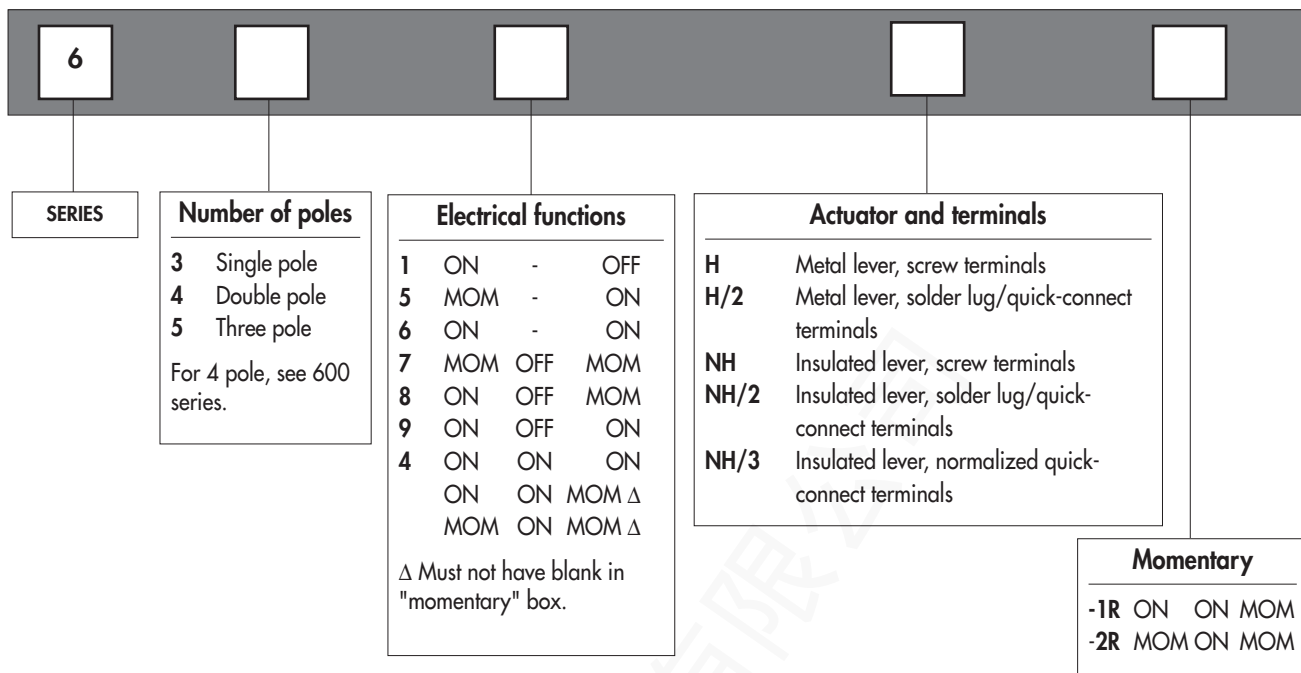
Compulsory if the panel is not metallic or not connected to ground. Should also be used when front face nut is of plastic material.

Order separately, see section I.

600H and 600NH series

Toggle switches - high amperage

Overview



ABOUT THIS SERIES

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



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

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



Sealing boots are available on 600H series to protect the switches against dust and water. They are presented in section H.



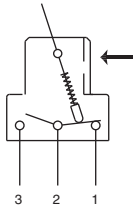
Mounting accessories : standard hardware supplied with all models :

- 600H and series : 1 hex nut U166 and 1 knurled nut U411
 - 600NH series : 1 hex nut U166 and 1 knurled nut U522
- Standard and special hardware are presented in section I.



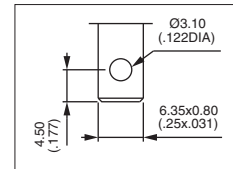
Packaging unit : 25 pieces.

→ Keyway

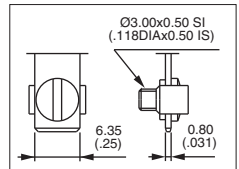


- 2 and 3 maintained or momentary positions
- Solder lug/quick-connect terminals 6,35 x 0,8 (.250 x .031) or screw terminals + clamp
- 1, 2 and 3 pole configurations
- Normalized quick-connect terminals (/3) optional. On request.

600H/2



600H



MODEL
STRUCTURE



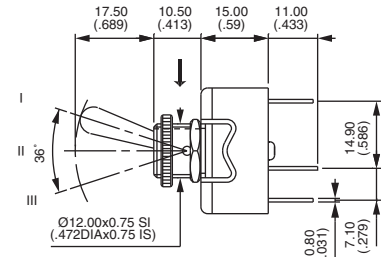
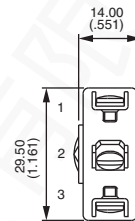
Single pole

→ Keyway



Solder lug	Screw term.
631H/2	631H
635H/2	635H
636H/2	636H
637H/2	637H
638H/2	638H
639H/2	639H

III	II	I
2-1		2-3
ON	-	OFF
MOM	-	ON
ON	-	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	OFF	ON



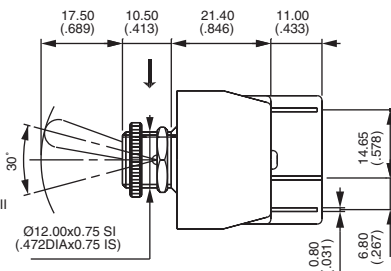
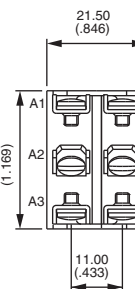
Double pole

→ Keyway



Solder lug	Screw term.
641H/2	641H
644H/2	644H*
644H/2-1R	644H-1R*
644H/2-2R	644H-2R*
645H/2	645H
646H/2	646H
647H/2	647H
648H/2	648H
649H/2	649H

III	II	I
2-1		2-3
5-4		5-6
ON	-	OFF
ON	ON	ON
ON	ON	MOM
MOM	ON	MOM
MOM	-	ON
ON	-	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	OFF	ON



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

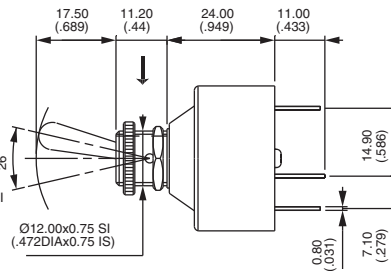
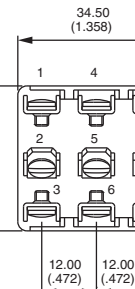
Three pole

→ Keyway



Solder lug	Screw term.
651H/2	651H
655H/2	655H
656H/2	656H
657H/2	657H
658H/2	658H
659H/2	659H

III	II	I
2-1		2-3
5-4		5-6
8-7		8-9
ON	-	OFF
MOM	-	ON
ON	-	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	OFF	ON



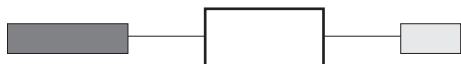
600H series

Toggle switches - high amperage - metal lever

OPTIONS

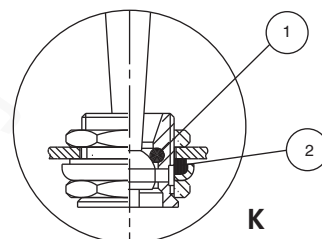


OPTIONS FOR 600H SERIES ONLY

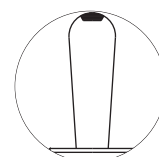


Complete above box with desired options in the same order as below

- T** Tropicalized diallylphthalate case (-40°C to +85°C)
- K** Front panel sealing by 1 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
- L** Special threaded bushing, length 16 mm (.629)
- LUXE** Chrome plated lever and cap nut U117
- TK LUXE** Options T, K and LUXE.
- G** Matt black finish on bushing, lever and nuts.
Includes tropicalization (option T)
- GK** Front panel sealing by O-ring and sealing washer (as described in option TK LUXE)
+ option G
- G038** Option G + fluorescent tip on lever.
White fluorescent tip becomes luminous when submitted to ultra violet rays.



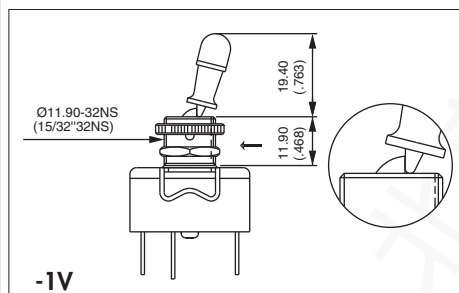
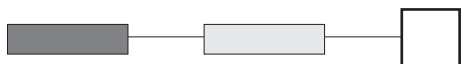
① O-ring ② Sealing washer



038

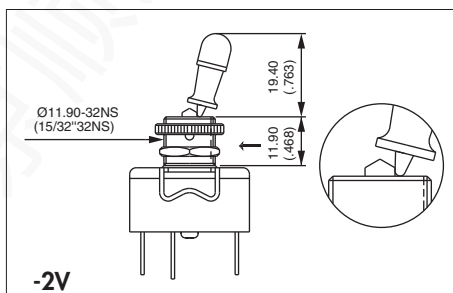
LOCKING LEVERS (1 and 2 pole models)

For 3-pole models, refer to 6000 series.



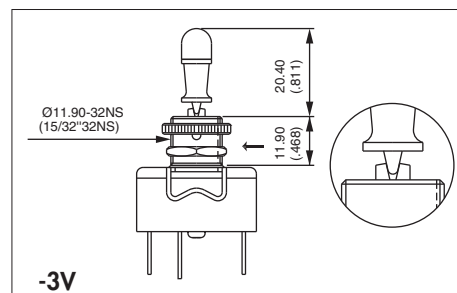
-1V

1 locked position



-2V

2 locked positions



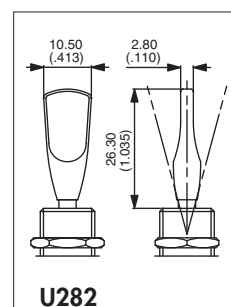
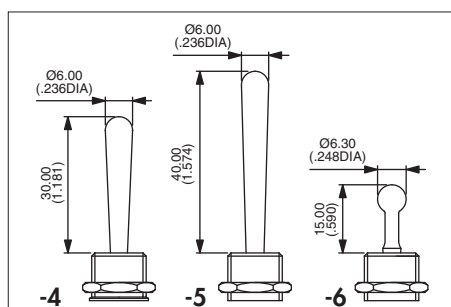
-3V

3 locked positions

→ Keyway

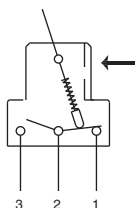
ACTUATOR OPTIONS (1 and 2 pole models)

- 4** 30 mm (1.181) long actuator
- 5** 40 mm (1.574) long actuator
- 6** Retro style actuator
(gold plated or chrome plated : on request)
- Ergonomic flat plastic actuator : add U282 at the end of switch model number.



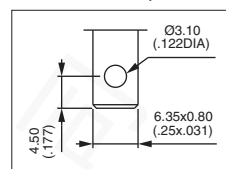
U282

→ Keyway

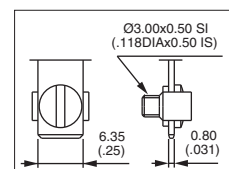


- 2 and 3 maintained or momentary positions
- Solder lug/quick-connect terminals 6,35 x 0,8 (.250 x .031) or screw terminals + clamp
- 1, 2 and 3 pole configurations
- Normalized quick-connect terminals (/3) optional. On request.

600NH/2



600NH



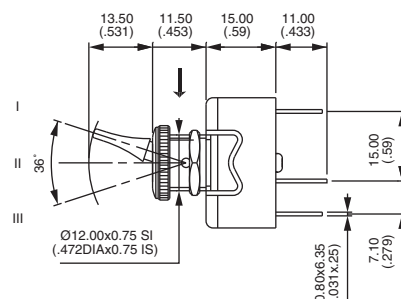
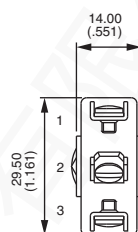
Single pole



Solder lug	Screw term.
631NH/2	631NH
635NH/2	635NH
636NH/2	636NH
637NH/2	637NH
638NH/2	638NH
639NH/2	639NH

III	II	I
2-1		2-3
ON	-	OFF
MOM	-	ON
ON	-	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	OFF	ON

→ Keyway



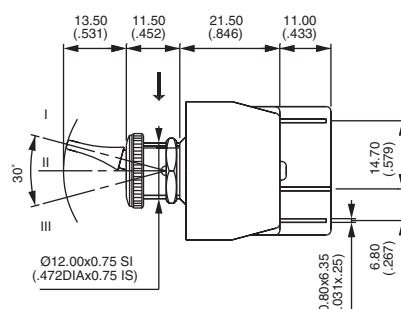
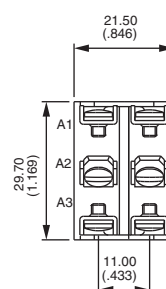
Double pole



Solder lug	Screw term.
641NH/2	641NH
644NH/2	644NH
644NH/2-1R	644NH-1R*
644NH/2-2R	644NH-2R*
645NH/2	645NH
646NH/2	646NH
647NH/2	647NH
648NH/2	648NH
649NH/2	649NH

III	II	I
2-1		2-3
5-4		5-6
ON	-	OFF
ON	ON	ON
ON	ON	MOM
MOM	ON	MOM
MOM	-	ON
ON	-	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	OFF	ON

→ Keyway



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

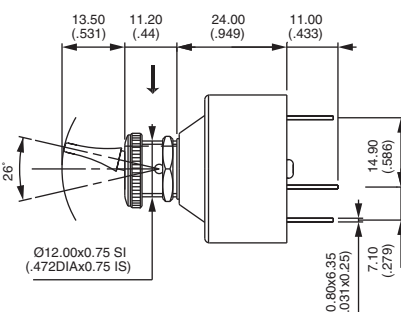
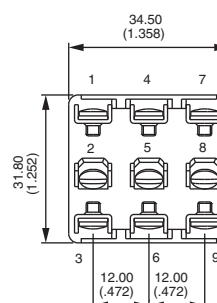
Three pole



Solder lug	Screw term.
651NH/2	651NH
655NH/2	655NH
656NH/2	656NH
657NH/2	657NH
658NH/2	658NH
659NH/2	659NH

III	II	I
2-1		2-3
5-4		5-6
8-7		8-9
ON	-	OFF
MOM	-	ON
ON	-	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	OFF	ON

→ Keyway



660 series

Power toggle switches - metal lever

Specifications

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load : 5A 250VAC - 10A 125VAC - 10A 30VDC
- Decrease by 50 % for inductive load
- Initial contact resistance : 10 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength :
2.500 Vrms 50 Hz min. between terminals
2.500 Vrms 50 Hz min. between terminals and frame
- Electrical life : 10.000 cycles at full load

UG1006-A

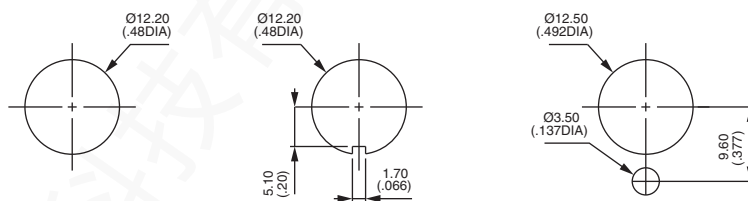
MATERIALS

- Case : melamine/polyester
- Actuator : brass, nickel plated
- Bushing : brass, nickel plated
- Contacts : silver

GENERAL SPECIFICATIONS

- Torque : 1,50 Nm (1.10 Ft.lb) max. applied to nut
- Panel thickness : 4,5 mm (.177) max.
- Operating temperature : -20°C to +55°C

PANEL CUT-OUT



ABOUT THIS SERIES

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



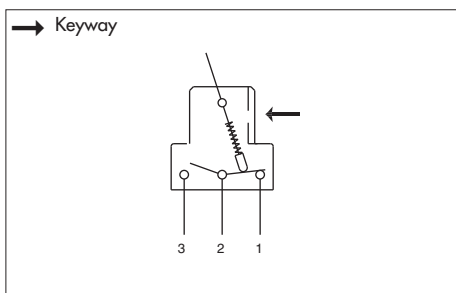
Sealing boots are available to protect the switches against dust and water. They are presented in section H.



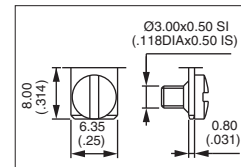
Mounting accessories : standard hardware supplied with all models : 1 hex nut U166, 1 knurled nut U411 and 1 lockwasher U13. Standard and special hardware are presented in section I.



Packaging unit : 25 pieces per type.



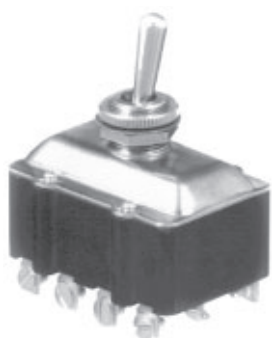
- 2 and 3 maintained or momentary positions
- Screw terminals



MODEL STRUCTURE

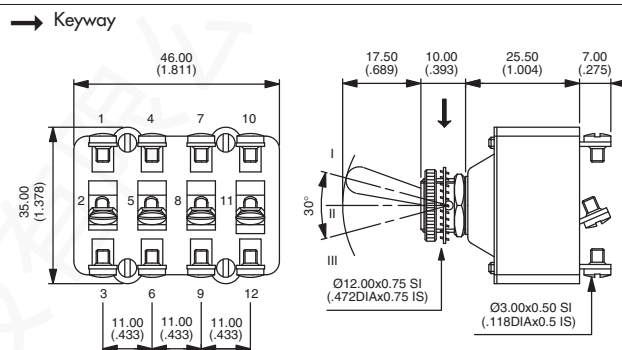


Four pole



661
665
666
667
668
669

III	II	I
2-1*	2-3**	
ON	-	OFF
MOM	-	ON
ON	-	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	OFF	ON

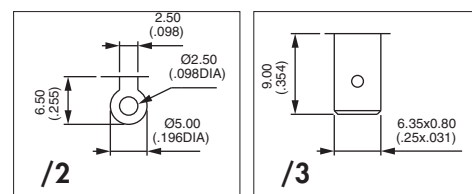


* (2-1) (5-4) (8-7) (11-10) ** (2-3) (5-6) (8-9) (11-12)

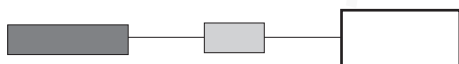
TERMINAL OPTIONS



- /2 Solder lug terminals
- /3 Quick-connect terminals 6,35 x 0,8 (.250 x .031)

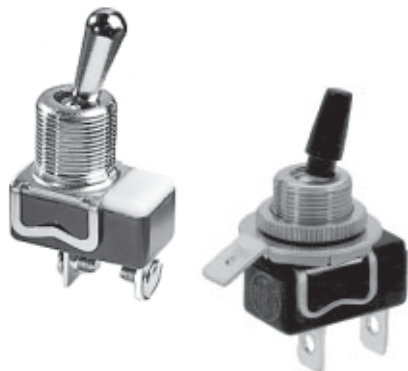


OTHER OPTIONS



- T** Tropicalized diallylphthalate case (-40°C to +85°C)
- LUXE** Chrome plated lever and cap nut U117
- TK LUXE** Front panel sealing by O-ring and sealing washer + options T and LUXE. See 600H series.
- G** Matt black finish on bushing, lever and nuts. Includes tropicalization (option T)
- GK** Front panel sealing by O-ring and sealing washer (as described in option TK LUXE) + option G

UG1006-A



- ☐ Butt action contacts
- ☐ Optional insulated levers (X213 and X490)

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
 - silver contacts (A) : 3A 250VAC - 6A 125VAC - 6A 30VDC
 - silver plated copper contacts (C) : 2A 250VAC
- Initial contact resistance : 10 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength :
 - 2.000 Vrms 50 Hz min. between terminals
 - 2.500 Vrms 50 Hz min. between terminals and frame
- Electrical life : 10.000 cycles at full load

MATERIALS

- Case :
 - function 1 : phenolic resin
 - funct. 6 & 9 : polyamide
- Actuator :
 - brass, nickel plated (1010 and 1020 models)
 - polyamide (1030 models)
- Bushing : brass, nickel plated
- Contacts :
 - A : silver
 - C : copper, silver plated

GENERAL SPECIFICATIONS

- Torque : 1,50 Nm (1.10 Ft.lb) max. applied to nut
- Panel thickness : 5 mm (.196) max.
- Operating temperature : -20°C to +55°C

ABOUT THIS SERIES

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 :
 - silver contact models : 1 hex nut U166 + 1 knurled nut U411
 - copper contact models : 1 hex nut U42 + 1 knurled nut U411



Packaging unit : 25 or 40 pieces depending on model.

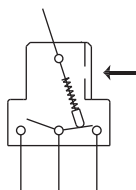
1000 series

Toggle switches - metal lever - economy range

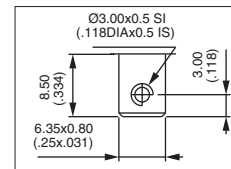
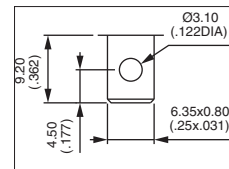
Solder lug and quick-connect terminals - screw terminals

MODEL
STRUCTURE

→ Keyway



- 2 and 3 positions
- Single pole configurations



MODEL
STRUCTURE



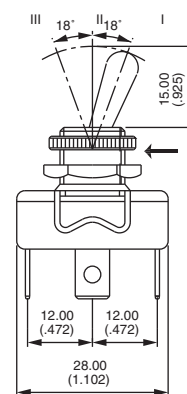
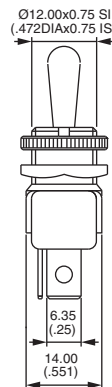
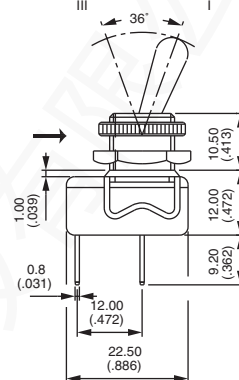
Solder lug and quick-connect terminals



1011
1016
1019

I	II	III
ON	-	OFF
ON	-	ON
ON	OFF	ON

→ Keyway



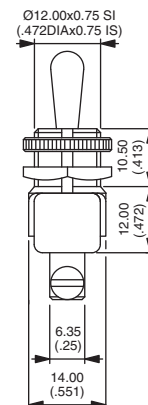
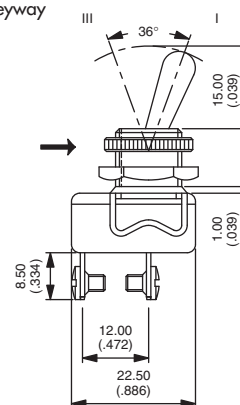
Screw terminals



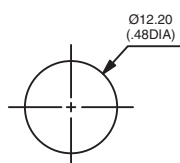
1021

I	II	III
ON	-	OFF

→ Keyway

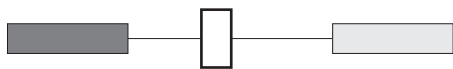


PANEL CUT-OUT



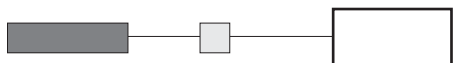


CONTACT MATERIALS

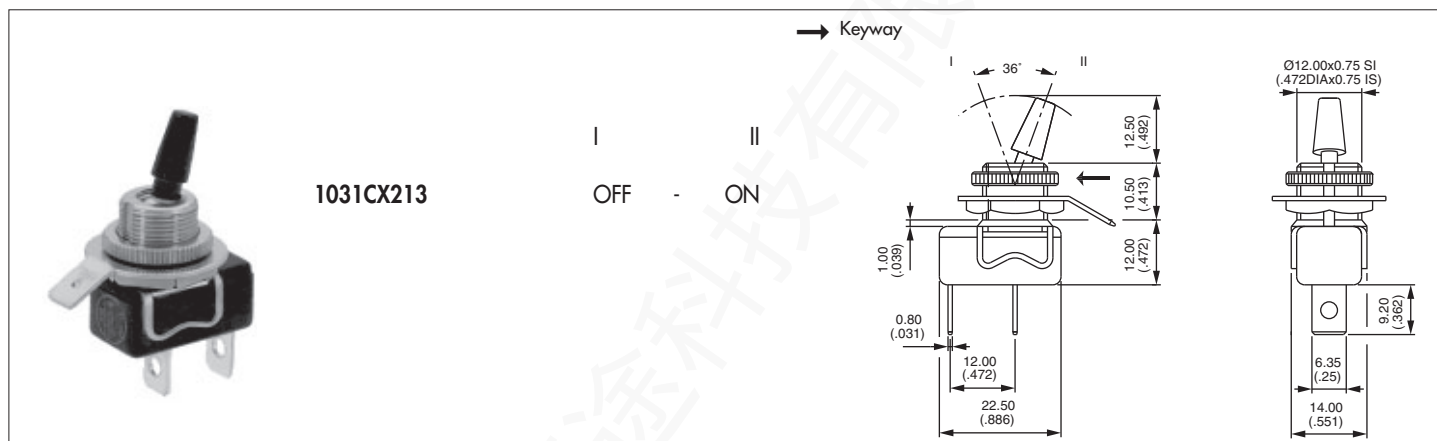


- A Silver
- C Copper, silver plated

SPECIAL OPTIONS WITH INSULATED LEVER

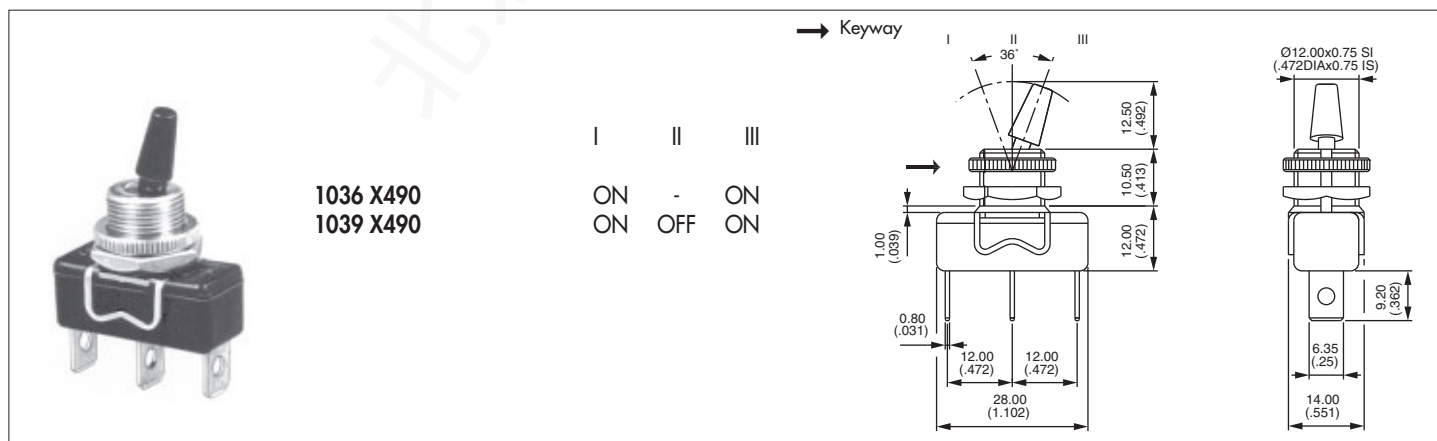


X213 Silver plated copper contacts (C)



Ground connector **U187** compulsory if the panel is not metallic or not connected to ground.
Order separately, see section I.

X490 Available with silver contacts (A) or silver plated copper contacts (C)



1500 series

Toggle switches - insulated lever and bushing

Distinctive features and specifications

UG1006-A

☐ UL approved

☐ Variety of actuator styles and colours

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
6A 250VAC (10.000 cycles)
10A 125VAC (6.000 cycles)
5A 12VDC (10.000 cycles)
- Initial contact resistance : 10 mΩ max.
- Insulation resistance : 1.000MΩ min. at 500VDC
- Dielectric strength :
2.000 Vrms 50 Hz min. between terminals and between terminals and metal panel

MATERIALS

- Case : polyamide
- Actuator : polyamide
- Bushing : polyamide
- Contacts : silver

GENERAL SPECIFICATIONS

- Torque : 0,95 Nm (.700 Ft.lb) max. applied to nut
- Panel thickness : 4,5 mm (.177) between 2 nuts
- Operating temperature : -20°C to +55°C

AGENCY APPROVALS



Availability : all models

Marking : To order switches marked UL, complete appropriate box of ordering format.

ABOUT THIS SERIES

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.

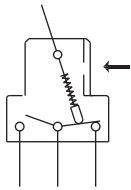


Mounting accessories : standard hardware supplied with all models : 1 hex nut U166 and 1 knurled nut U411. Standard and special hardware available are presented in section I.

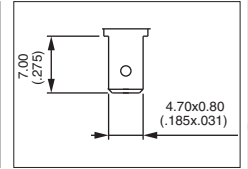
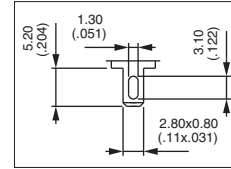


Packaging unit : 50 pieces per type and colour.

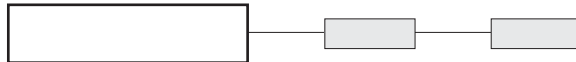
→ Keyway



- 2 and 3 maintained positions
- Silver contacts standard
- Single pole configurations



MODEL
STRUCTURE



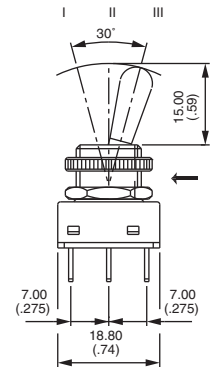
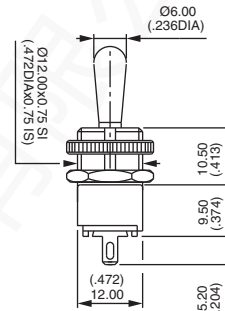
Solder lug terminals

→ Keyway



1531A2
1536A2
1539A2

I	II	III
ON	-	OFF
ON	-	ON
ON	OFF	ON



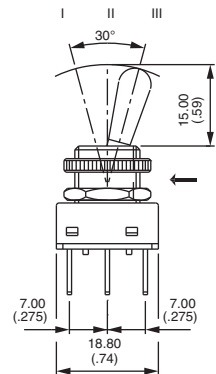
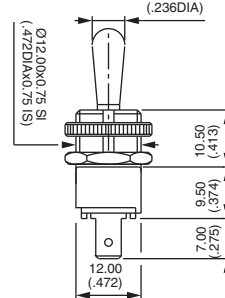
Quick-connect terminals 4,7 x 0,8 (.185 x .031)

→ Keyway

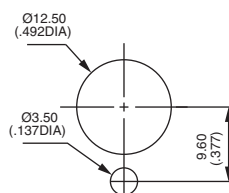
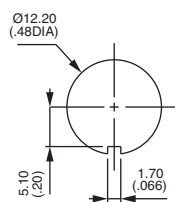
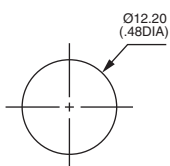


1531A8
1536A8
1539A8

I	II	III
ON	-	OFF
ON	-	ON
ON	OFF	ON



PANEL CUT-OUT



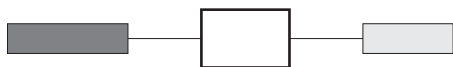
1500 series

Toggle switches - insulated lever and bushing

OPTIONS



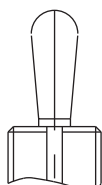
ACTUATORS



Polyamide

Black L12
Red L16
White L17
Orange L19

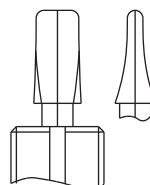
Brass,
nickel plated L1N



Standard

Polyamide

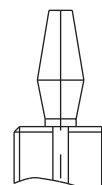
Black L22
Red L26
White L27
Orange L29



Flat

Polyamide

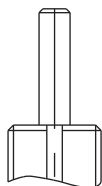
Black L32
Red L36
White L37
Orange L39



Dual cone

Polyamide

Black L42
Red L46
White L47
Orange L49



Cylindrical

AGENCY APPROVALS



UL

Availability : all models.

Marking : to order switches marked UL, complete above box with desired approvals.

仅供产品选型使用

1600 and 1700 series

Toggle switches - metal lever

Distinctive features and specifications

UG1006-A



- ☐ Reduced behind-panel space requirement (models with side terminals)
- ☐ Optional insulated lever

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load : 4A 30VDC
- Initial contact resistance : 10 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength :
 - 2.000 Vrms 50 Hz min. between terminals
 - 2.000 Vrms 50 Hz min. between poles and between terminals and lever
- Electrical life : 10.000 cycles at full load

MATERIALS

- Case : phenolic resin
- Actuator :
 - 1600 models : brass nickel plated
 - 1700 models : polyamide
- Bushing : brass, nickel plated
- Contacts : phosphor bronze and brass, silver plated.

GENERAL SPECIFICATIONS

- Torque : 1,50 Nm (1.10 Ft.lb) max. applied to nut
- Panel thickness : 5 mm (.196) max.
- Operating temperature : -20°C to +55°C

ABOUT THIS SERIES

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



Sealing boots are available on models 1600 to protect the switches against dust and water. They are presented in section H.



Mounting accessories : standard hardware supplied with all models : 1 hex nut U42 and 1 knurled nut U411. They are presented in section I.



Packaging unit : 25 or 50 pieces depending on model.

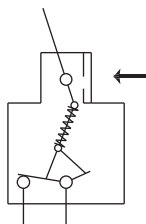
1600 and 1700 series

Toggle switches - metal lever

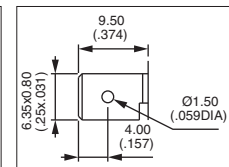
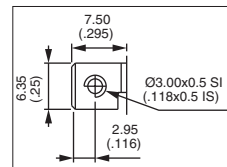
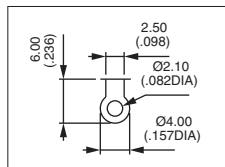
Solder lug or screw terminals

MODEL
STRUCTURE

→ Keyway



- Wiping contacts
- Single pole configurations



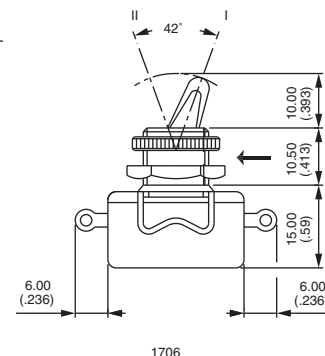
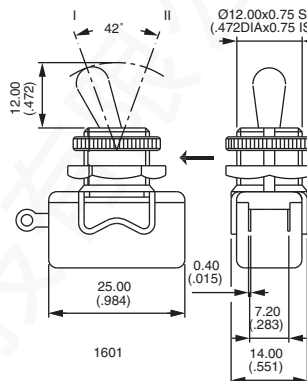
Horizontal solder lug terminals



Metal lever	Insulated black lever
1601	1701
1606	1706

I	ON	-	OFF
II	ON	-	ON

→ Keyway



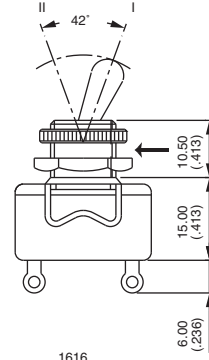
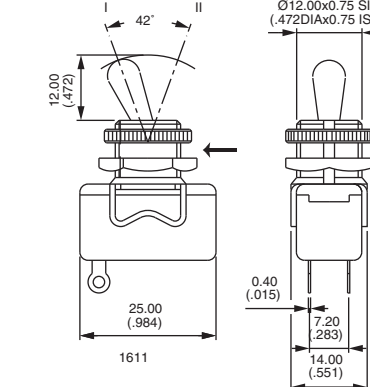
Metal lever - vertical solder lug terminals



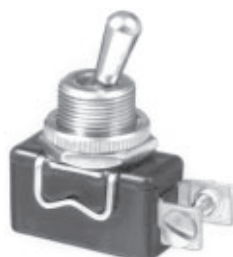
1611
1616

I	ON	-	OFF
II	ON	-	ON

→ Keyway



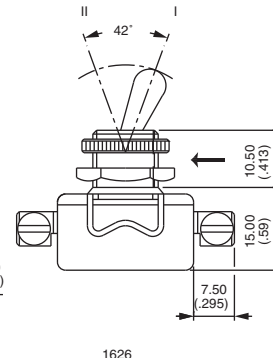
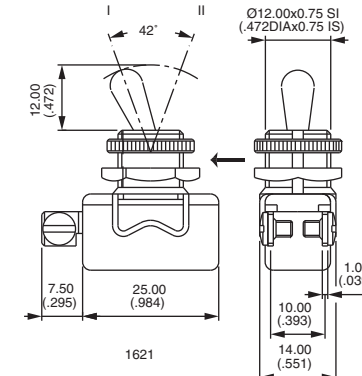
Metal lever - horizontal screw terminals



1621
1626

I	ON	-	OFF
II	ON	-	ON

→ Keyway





1600 and 1700 series

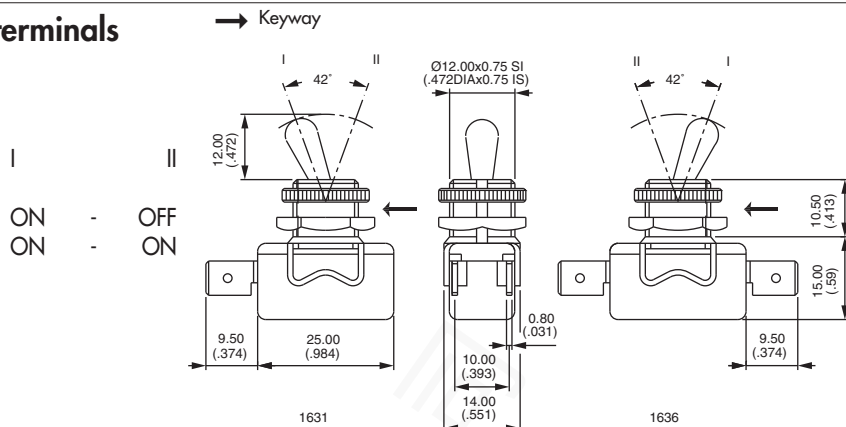
Toggle switches - metal lever

Quick-connect terminals

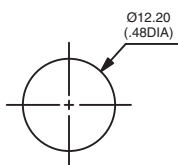
Metal lever - horizontal quick-connect terminals



1631
1636



PANEL CUT-OUT



仅供产品选型使用

1600 and 1700 series

Toggle switches - metal lever

Distinctive features and specifications

UG1006-A



- ☐ Reduced behind-panel space requirement (models with side terminals)
- ☐ Optional insulated lever

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load : 4A 30VDC
- Initial contact resistance : 10 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength :
 - 2.000 Vrms 50 Hz min. between terminals
 - 2.000 Vrms 50 Hz min. between poles and between terminals and lever
- Electrical life : 10.000 cycles at full load

MATERIALS

- Case : phenolic resin
- Actuator :
 - 1600 models : brass nickel plated
 - 1700 models : polyamide
- Bushing : brass, nickel plated
- Contacts : phosphor bronze and brass, silver plated.

GENERAL SPECIFICATIONS

- Torque : 1,50 Nm (1.10 Ft.lb) max. applied to nut
- Panel thickness : 5 mm (.196) max.
- Operating temperature : -20°C to +55°C

ABOUT THIS SERIES

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



Sealing boots are available on models 1600 to protect the switches against dust and water. They are presented in section H.



Mounting accessories : standard hardware supplied with all models : 1 hex nut U42 and 1 knurled nut U411. They are presented in section I.



Packaging unit : 25 or 50 pieces depending on model.

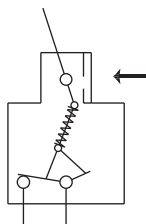
1600 and 1700 series

Toggle switches - metal lever

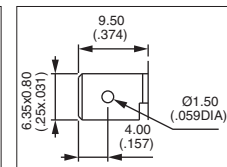
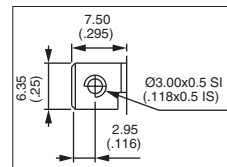
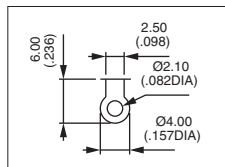
Solder lug or screw terminals



→ Keyway



- Wiping contacts
- Single pole configurations



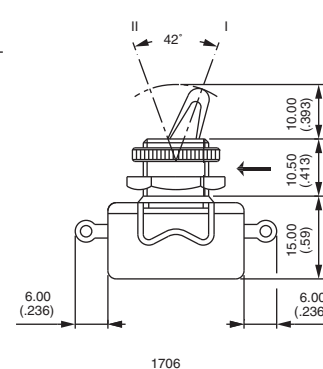
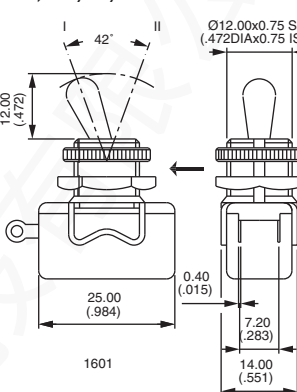
Horizontal solder lug terminals



Metal lever	Insulated black lever
1601	1701
1606	1706

I	ON	-	OFF
II	ON	-	ON

→ Keyway



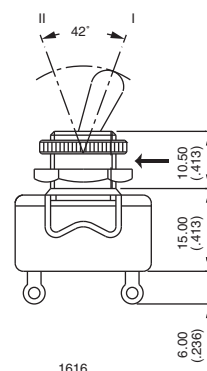
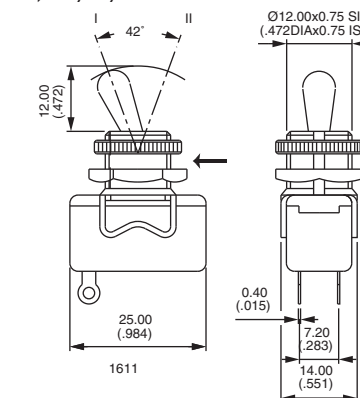
Metal lever - vertical solder lug terminals



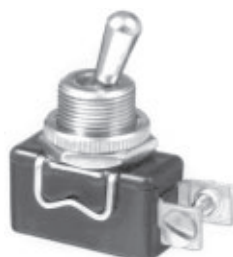
1611
1616

I	ON	-	OFF
II	ON	-	ON

→ Keyway



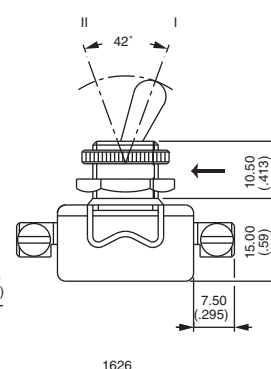
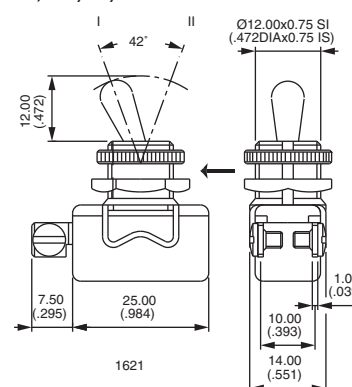
Metal lever - horizontal screw terminals



1621
1626

I	ON	-	OFF
II	ON	-	ON

→ Keyway





1600 and 1700 series

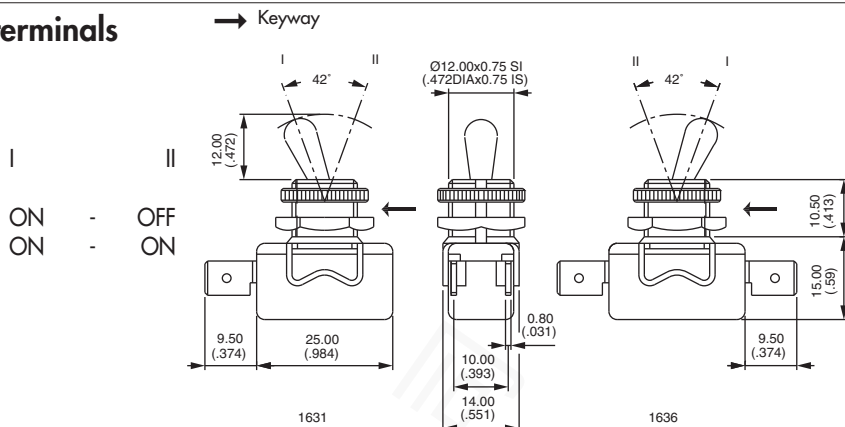
Toggle switches - metal lever

Quick-connect terminals

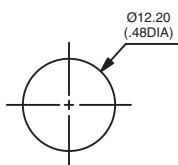
Metal lever - horizontal quick-connect terminals



1631
1636



PANEL CUT-OUT

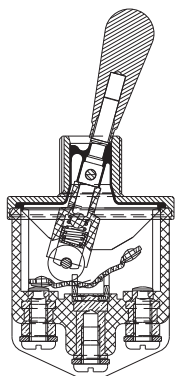


3500 series

High performance toggle switches - environmentally sealed

Distinctive features and specifications

UG1006-A



□ Completely sealed switches withstanding 0,1 bar pressure

- Frontal sealing to IP67 or IP69K by a silicone membrane (for sealed panel mounting, add washer U60, section I).
- Rear sealing to IP 64 provided by moulded-in terminal inserts

□ Approved to European standards CECC 96000

□ Three types of terminals

□ Many lever styles available

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load and electrical life at full load: see table below
- Initial contact resistance : 10 mΩ max. at 1A 2VDC
- Insulation resistance : 1.000 MΩ
- Dielectric strength : 2.500 Vrms 50 Hz min. between terminals
3.000 Vrms 50 Hz min. between terminals and frame

GENERAL PERFORMANCES

FUNCTIONS	GENERAL PERFORMANCES		
	Alternate current	Direct Current	According to CECC 96201-004
ON-OFF and ON-ON	6.000 cycles, T65°C 20A 125VAC, 3/4HP 15A 250VAC, 1-1/2HP T5, 115VAC, 50/400Hz	10.000 cycles, T20°C 15A 28VDC resistive 15A 28VDC inductive 5A 28VDC lamp load	10.000 cycles 16A 250VAC 15A 32VDC
ON OFF ON	6.000 cycles, T65°C 18A 125VAC, 1/2HP 10A 250VAC, 1/2HP T2, 115VAC, 50/400Hz	10.000 cycles, T20°C 15A 28VDC resistive 15A 28VDC inductive 5A 28VDC lamp load	
OTHER FUNCTIONS	6.000 cycles, T65°C 15A 125VAC 10A 250VAC T2, 115VAC, 50/400Hz	10.000 cycles, T20°C 15A 28VDC resistive 10A 28VDC inductive 3A 28VDC lamp load	

MATERIALS

- Case : mineral filled polyester UL94-V0
- Bushing and cover : zamac
- Actuator : brass, nickel or chrome plated, or anodized aluminium
- Contacts : silver alloy

AGENCY APPROVAL



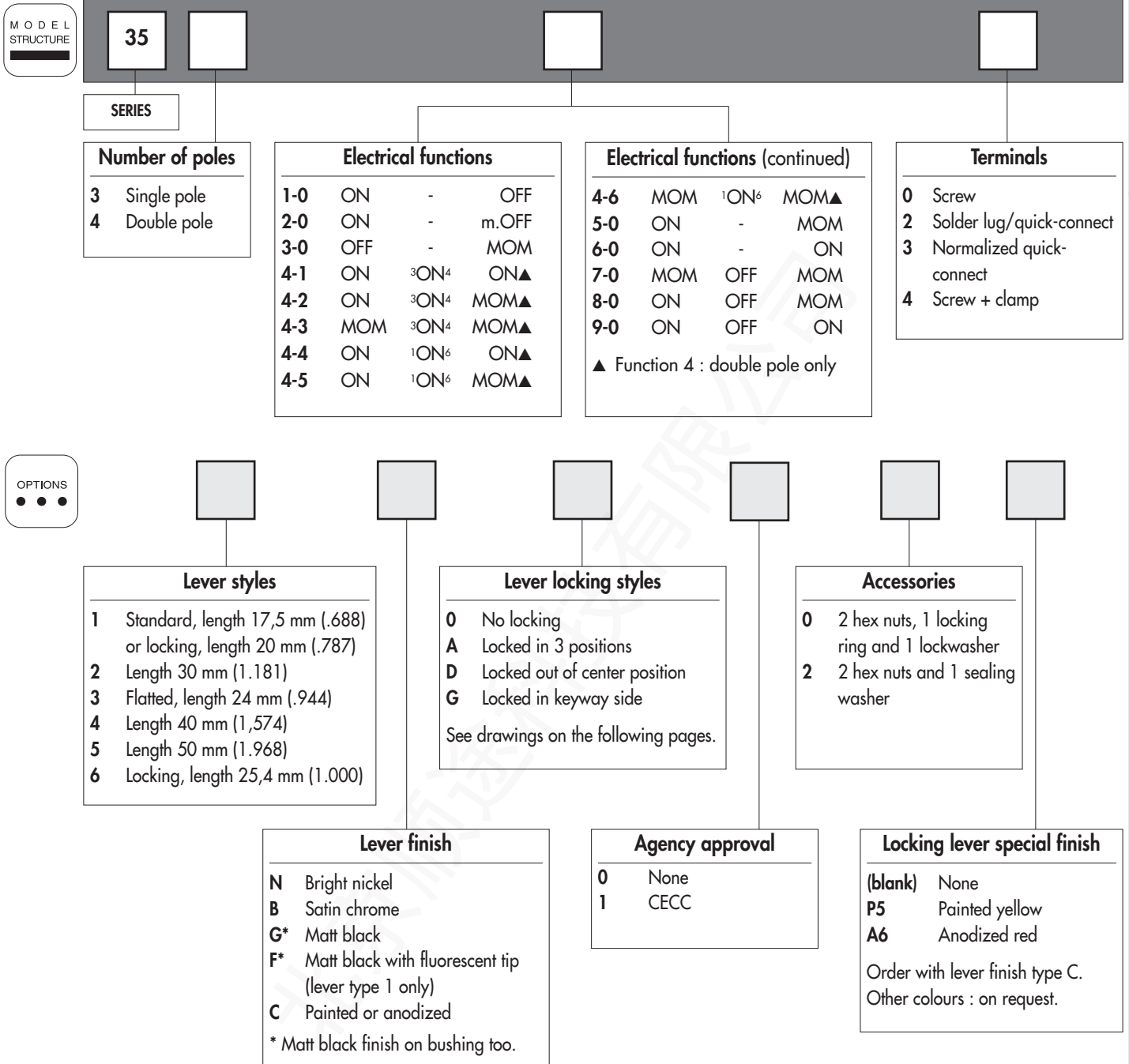
CECC 96201-004

Availability : consult factory for details of approved models.

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

GENERAL SPECIFICATIONS

- Mechanical life : 40.000 cycles
- Torque : 2 Nm (1.47 Ft.lb) max. applied to nut
- Panel thickness : see "Mounting Accessories" on the following pages
- Operating temperature : -40°C to +85°C
- Moisture resistance : 56 days



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
- their options in the same order as in above chart

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

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



Packaging unit : 25 pieces

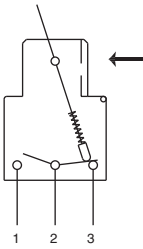
3500 series

High performance toggle switches - environmentally sealed

仅供产品选型使用

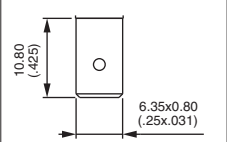
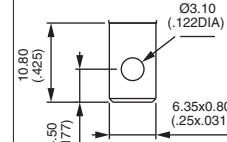
MODEL
STRUCTURE

→ Keyway

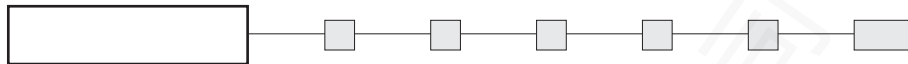


- Screw, solder lug or quick-connect terminals
- Also available with threaded terminals : consult factory
- Screw terminals + clamp : on request.

Ø3.50
(.137DIA)



MODEL
STRUCTURE



Shown with standard lever

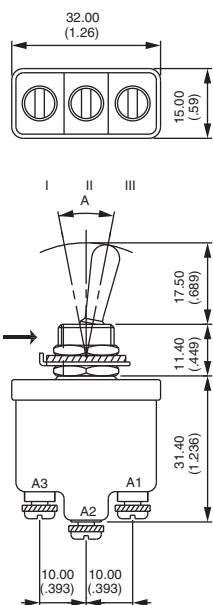


FUNCTIONS			BASIC PART NUMBER					
III	II	I	Screw terminals		Solder lugs and quick-connect term.		Normalized quick-connect terminals	
A2-A3	* A3-B5	A1-A2	Single pole	Double pole	Single pole	Double pole	Single pole	Double pole
B5-B6	** A1-B5	B5-B4						
ON	-	OFF	3531-00	3541-00	3531-02	3541-02	3531-03	3541-03
ON	-	m.OFF	3532-00	3542-00	3532-02	3542-02	3532-03	3542-03
OFF	-	MOM	3533-00	3543-00	3533-02	3543-02	3533-03	3543-03
ON	ON *	ON		3544-10		3544-12		3544-13
ON	ON *	MOM		3544-20		3544-22		3544-23
MOM	ON *	MOM		3544-30		3544-32		3544-33
ON	ON **	ON		3544-40		3544-42		3544-43
ON	ON **	MOM		3544-50		3544-52		3544-53
MOM	ON **	MOM		3544-60		3544-62		3544-63
ON	-	MOM	3535-00	3545-00	3535-02	3545-02	3535-03	3545-03
ON	-	ON	3536-00	3546-00	3536-02	3546-02	3536-03	3546-03
MOM	OFF	MOM	3537-00	3547-00	3537-02	3547-02	3537-03	3547-03
ON	OFF	MOM	3538-00	3548-00	3538-02	3548-02	3538-03	3548-03
ON	OFF	ON	3539-00	3549-00	3539-02	3549-02	3539-03	3549-03

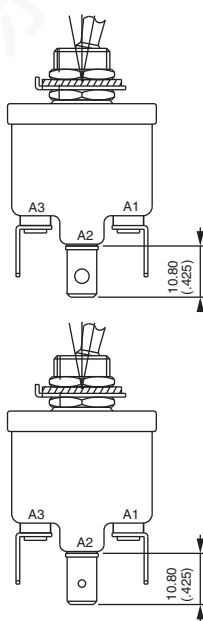
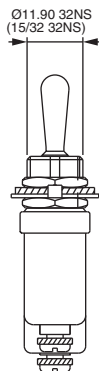
→ Keyway

* and **: A2-B4 and A2-B6 = jumper to be wired by the user.

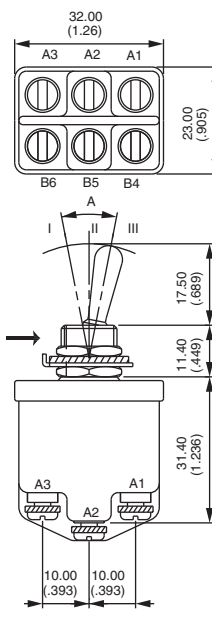
Single pole



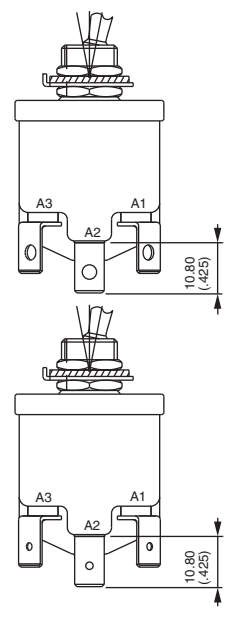
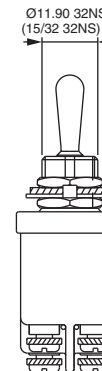
A → 2 POS. 22°
A → 3 POS. 30°



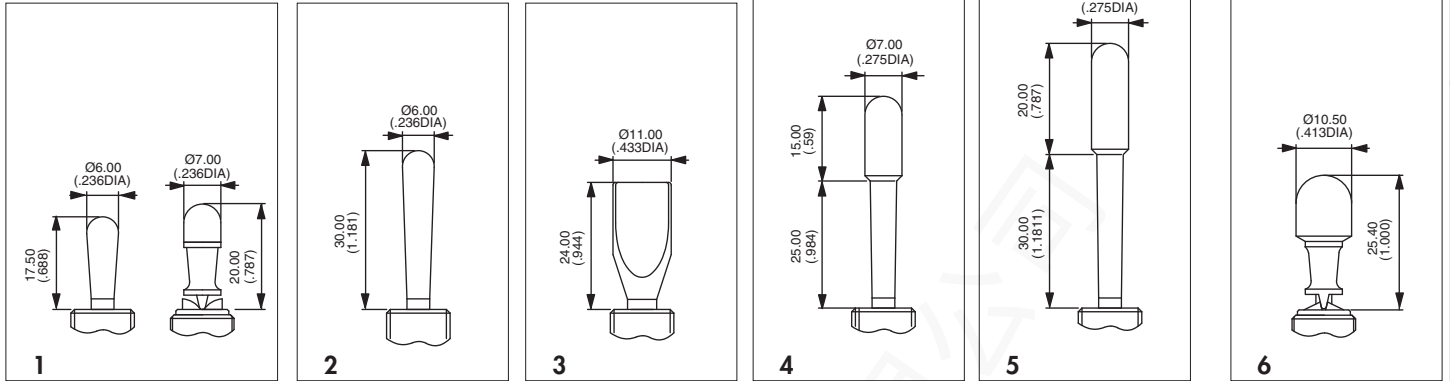
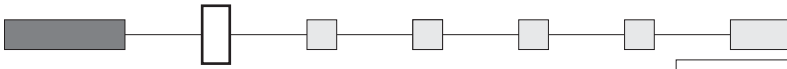
Double pole



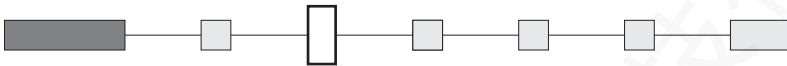
A → 2 POS. 22°
A → 3 POS. 30°



LEVER STYLES



LEVER FINISH

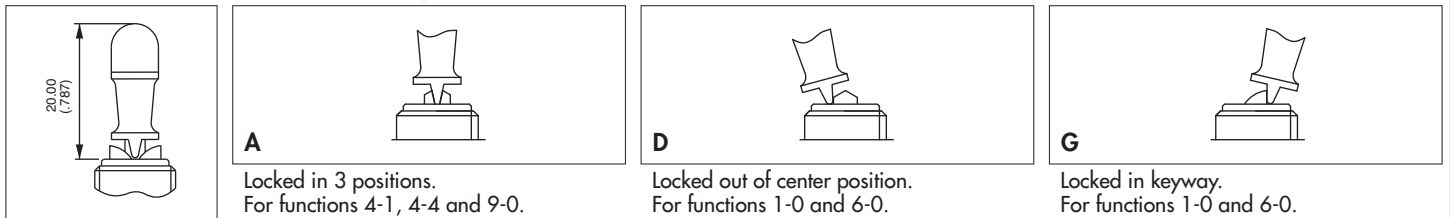


- N** Bright nickel
 - B** Satin chrome
 - G*** Matt black
 - F*** Matt black with fluorescent tip (available with lever type 1 only)
 - C** Painted or anodized (for locking lever only)
- * Matt black finish on bushing too.

LOCKING LEVER STYLES



- 0** No locking

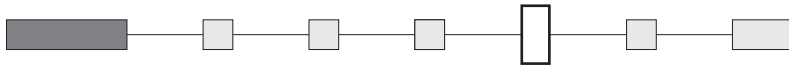


3500 series

High performance toggle switches - environmentally sealed

OPTIONS
● ● ●

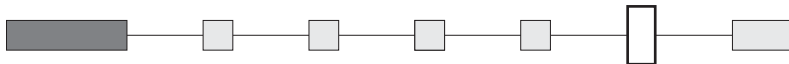
AGENCY APPROVAL



- 0 None
1 CECC

A

MOUNTING ACCESSORIES



- 0 For NON-SEALED mounting (panel cut-out fig. 1, 2 or 3)
2 hex nuts 14 mm (.551) across flats, 1 locking ring U121 or U12, 1 lockwasher U13
Panel thickness : 5 mm (.196) max.
- 2 For SEALED mounting (panel cut-out fig. 2)
2 hex nuts 14 mm (.551) across flats and 1 sealing washer U60
Panel thickness : 4 mm (.157) max.

Special hardware : black cap nut U129. Order separately. See section I.

PANEL CUT-OUT

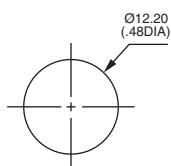


Figure 1

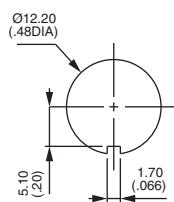


Figure 2

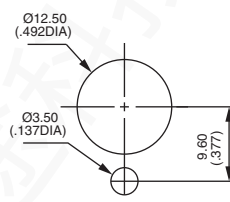


Figure 3

LOCKING LEVER SPECIAL FINISH



- (blank) None
P5 Painted yellow
A6 Anodized red

Order with lever finish type C.
Other colours on request.

3600NF series

Sealed toggle switches for outdoor applications

Distinctive features and specifications



UG1006-A

❑ Sealing obtained by :

- O-ring between lever and bushing
- half-length boot and nylon washer (supplied mounted)
- elastomer gasket between cover and case
- molded-in terminal inserts
- sealing washer U60

❑ Solid silver contacts

❑ UL approved

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load : 12A 28VDC - 6A 250VAC
- Initial contact resistance : 10 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength :
 - 2.500 Vrms 50 Hz min. between terminals
 - 3.000 Vrms 50 Hz min. between terminals and frame
- Electrical life : 10.000 cycles at full load

MATERIALS

- Case : phenolic resin
- Actuator : brass, nickel plated
- Bushing : brass, nickel plated
- Contacts : solid silver

GENERAL SPECIFICATIONS

- Torque : 1,50 Nm (1.10 Ft.lb) max. applied to nut
- Panel thickness : 2 mm (.079) max. with all accessories
- Operating temperature : -40°C to +85°C

AGENCY APPROVAL



Availability : consult factory for details or approved models.

Marking : to order switches marked UL, complete last box of ordering format.

ABOUT THIS SERIES

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



Mounting accessories : 1 sealing boot U1151, 1 hex nut U166, 1 nylon washer U21 and 1 sealing washer U60. See section I.



Packaging unit : 25 pieces per type and colour.

3600NF series

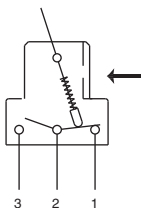
仅供产品选型使用

Sealed toggle switches for outdoor applications

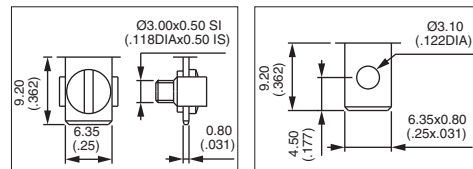
Screw terminals - solder lug/quick-connect terminals

MODEL
STRUCTURE

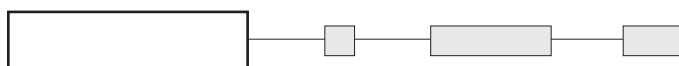
→ Keyway



- 1 and 2 pole configurations



MODEL
STRUCTURE



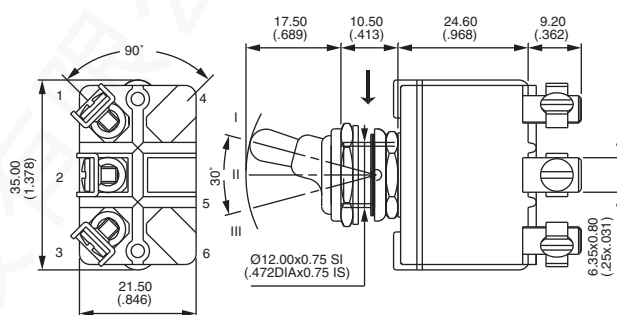
Screw terminals - single pole

→ Keyway



3631NF
3635NF
3636NF
3637NF
3638NF
3639NF

III	II	I
2-1		2-3
ON	-	OFF
MOM	-	ON
ON	-	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	OFF	ON



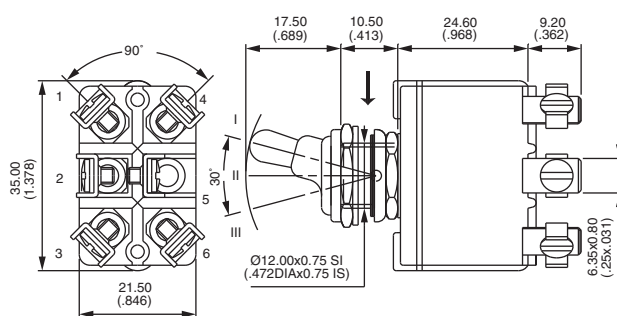
Screw terminals - double pole

→ Keyway



3641NF
3644NF*
3645NF
3646NF
3647NF
3648NF
3649NF

III	II	I
2-1		2-3
5-4		5-6
ON	-	OFF
ON	ON	ON
MOM	-	ON
ON	-	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	OFF	ON



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

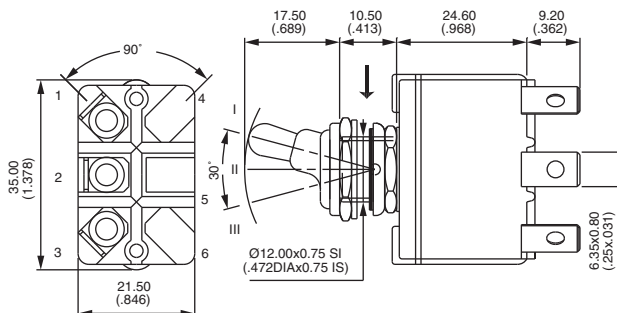
Solder lug/quick-connect terminals - single pole

→ Keyway



3631NF/2
3635NF/2
3636NF/2
3637NF/2
3638NF/2
3639NF/2

III	II	I
2-1		2-3
ON	-	OFF
MOM	-	ON
ON	-	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	OFF	ON



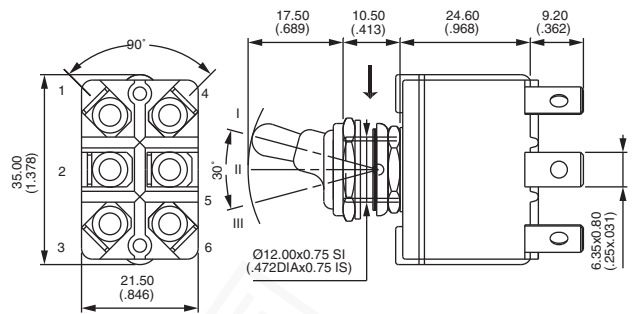


Solder lug and quick-connect terminals - double pole



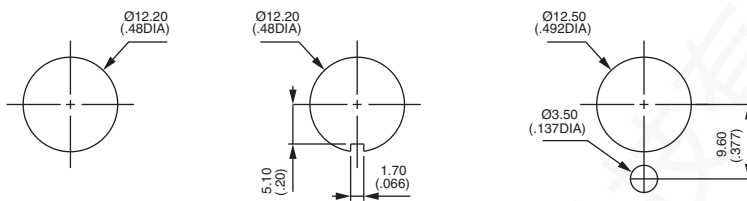
3641NF/2
3644NF/2*
3645NF/2
3646NF/2
3647NF/2
3648NF/2
3649NF/2

III	II	I
2-1		2-3
5-4		5-6
ON	-	OFF
ON	ON	ON
MOM	-	ON
ON	-	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	OFF	ON

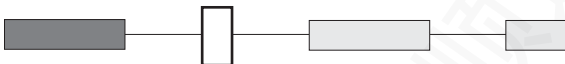


* Function 4 : DP in 4P case, see end of catalogue.

PANEL CUT-OUT



FINISH

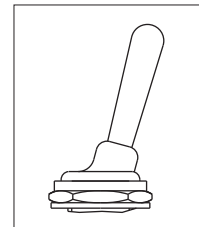


G Matt black finish on lever and nut of sealing boot

SPECIAL LEVER



X1052 30 mm (1.181) long lever



AGENCY APPROVAL



UL

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

4600 and 4400 series

Toggle switches

Distinctive features and specifications

UG1006-A



- ☐ High current/voltage rating in a small case
- ☐ Butt action contacts
- ☐ Insulated or metal lever
- ☐ UL, CSA and VDE (EN 61058-1) approved

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
 - silver contacts (A) : 4A 250VAC - 6A 125VAC
 - silver plated copper contacts (C) : 2A 250VAC - 3A 125VAC
- Approved electrical ratings : see table below
- Initial contact resistance : 10 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength :
 - 2.000 Vrms 50 Hz min. between terminals
 - 2.500 Vrms 50 Hz min. between poles and between terminals and frame
- Electrical life : 10.000 cycles at full load

APPROVALS	MODELS	POLES	FUNCTIONS	APPROVED RATINGS
UL/CSA	4600A	1-2	1-6-9	3A 250VAC - 6A 125VAC
VDE (EN 61058-1)	4400A	1-2	1-6	4(2)A 250VAC
	4600A	1-2-3	1-6	4(2)A 250VAC

MATERIALS

- Case : melamine phenolic
- Actuator :
 - insulated : polyamide ,6-6
 - non-insulated : brass, nickel plated
- Bushing :
 - insulated : polyamide 6-6
 - non-insulated : brass, nickel plated
- Contacts :
 - A : silver
 - C : copper, silver plated

GENERAL SPECIFICATIONS

- Torque : 0,95 Nm (.70 Ft.lb) max. applied to nut
- Panel thickness : 5 mm (.196) between 2 nuts
- Operating temperature : -20°C to +55°C
- Hand soldering : 270°C max. for 10 seconds max. - iron Ø3 (.118)

AGENCY APPROVALS



EN 61058-1

Availability : see above chart.

Marking : VDE approved models are standard marked.

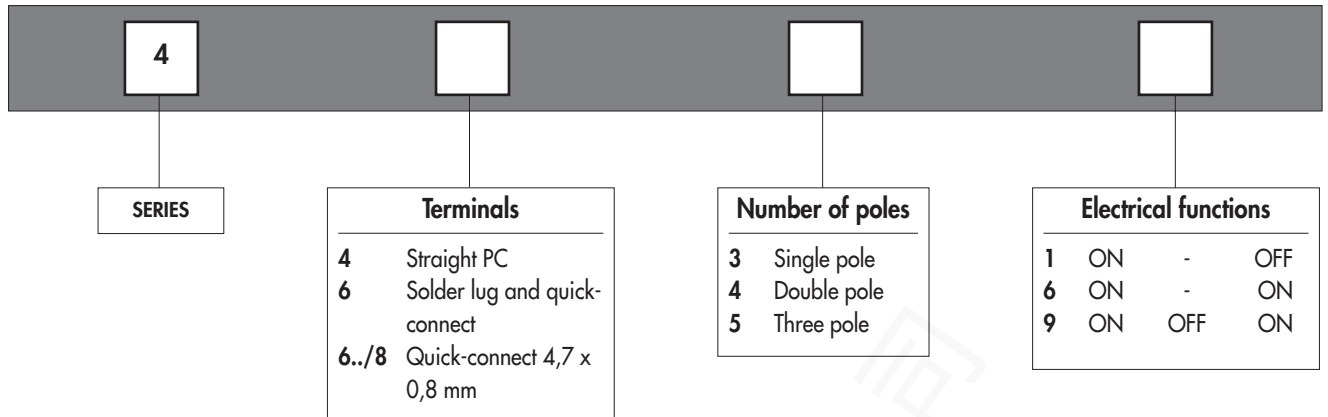
To order switches marked UL-CSA, complete appropriate box of ordering format.

仅供产品选型使用 4600 and 4400 series

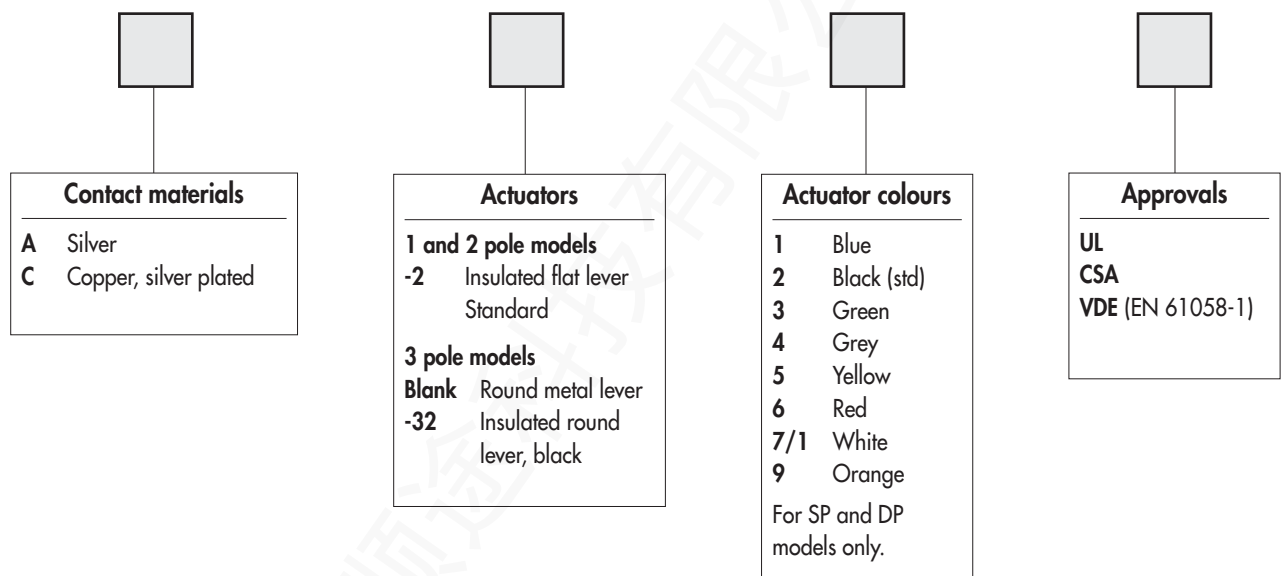
Toggle switches

Overview

MODEL
STRUCTURE



OPTIONS



ABOUT THIS SERIES

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



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



Sealing boots are available on 3 pole models to protect the switches against dust and water. They are presented in section H.



Mounting accessories : standard hardware supplied with all models : 1 hex nut U166 and 1 knurled nut U520 in the same colour as the lever (insulated models) or U411 nickel plated (metal lever models). Standard and special hardware available are presented in section I.



Packaging unit : 20 pieces.

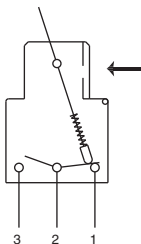
4600 and 4400 series

Toggle switches

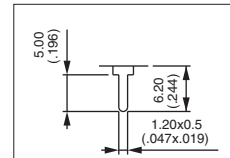
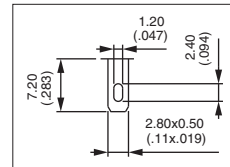
Insulated flat lever

MODEL
STRUCTURE

→ Keyway



- Solder lug/quick-connect terminals 2,8 x 0,5 (.110 x .019)
- Straight PC terminals or quick-connect terminals 4,7 x 0,8 (.185 x .031)
- 2 and 3 maintained positions
- 1 and 2 pole configurations



MODEL
STRUCTURE



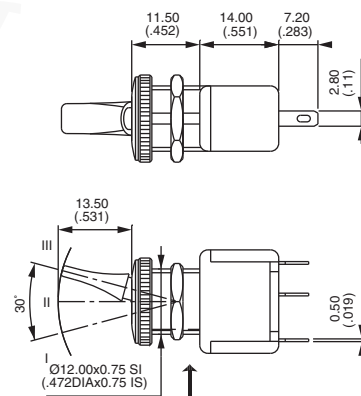
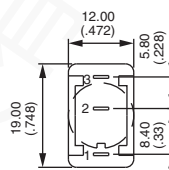
Solder lug/quick-connect terminals - single pole

→ Keyway



4631 -2
4636 -2
4639 -2

III	II	I
ON	-	OFF
ON	-	ON
ON	OFF	ON



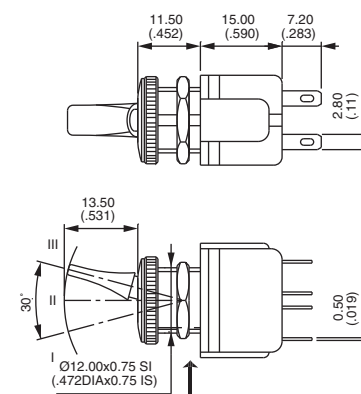
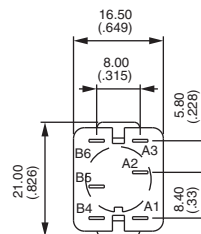
Solder lug/quick-connect terminals - double pole

→ Keyway



4641 -2
4646 -2
4649 -2

III	II	I
ON	-	OFF
ON	-	ON
ON	OFF	ON



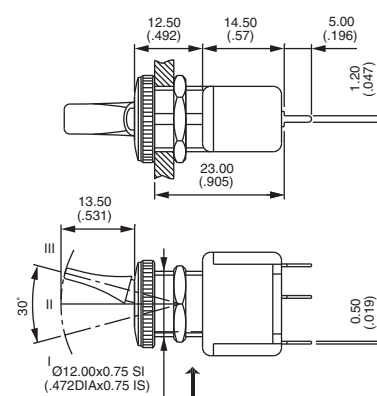
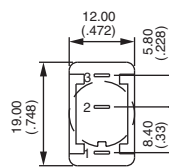
Straight PC terminals - single pole

→ Keyway



4431 -2
4436 -2
4439 -2

III	II	I
ON	-	OFF
ON	-	ON
ON	OFF	ON



4600 and 4400 series

Toggle switches

Insulated flat lever



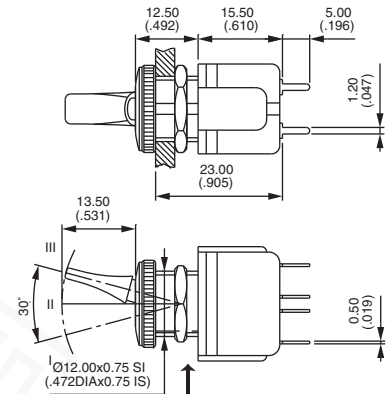
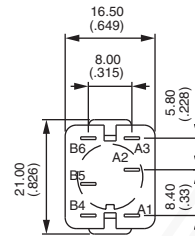
Straight PC terminals - double pole



4441 -2
4446 -2
4449 -2

III	II	I
ON	-	OFF
ON	-	ON
ON	OFF	ON

→ Keyway



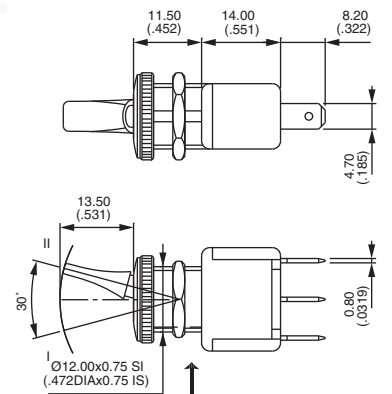
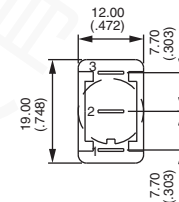
Quick-connect terminals 4,7 x 0,8 (.185 x .031) - single pole



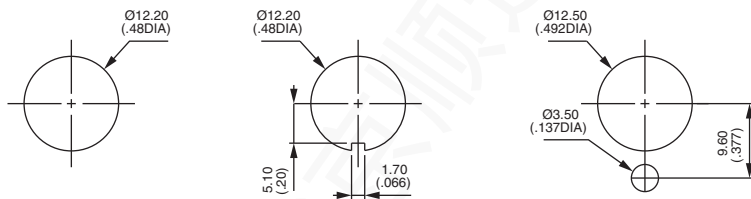
4631/8 -2
4636/8 -2

I	II
ON	- OFF
ON	- ON

→ Keyway



PANEL CUT-OUT



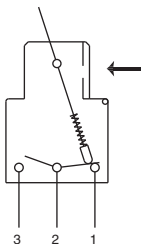
4600 and 4400 series

Toggle switches

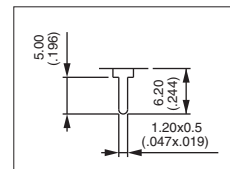
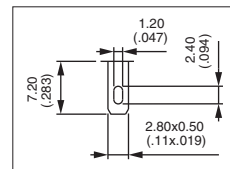
Round lever - three pole

MODEL
STRUCTURE

→ Keyway



- Solder lug or straight PC terminals
- 2 and 3 maintained positions



MODEL
STRUCTURE



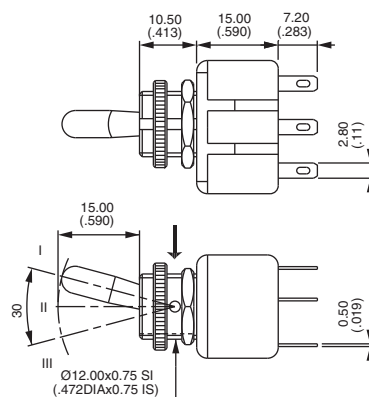
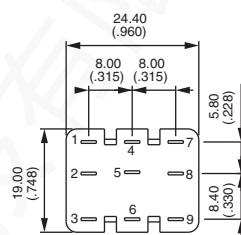
Solder lug terminals - metal lever

→ Keyway



4651
4656
4659

III	II	I
ON	-	OFF
ON	-	ON
ON	OFF	ON



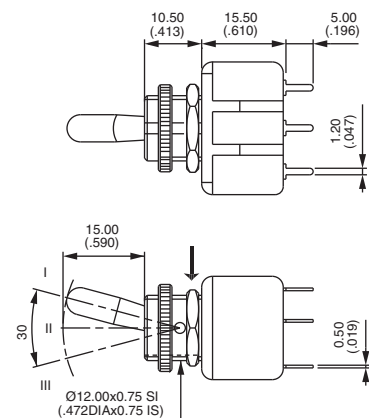
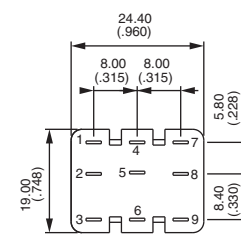
Straight PC terminals - metal lever

→ Keyway



4451
4456
4459

III	II	I
ON	-	OFF
ON	-	ON
ON	OFF	ON



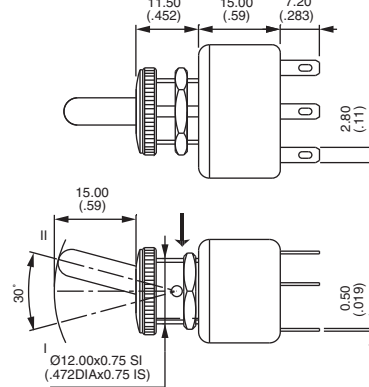
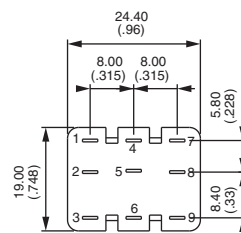
Solder lug terminals - insulated lever - silver contacts

→ Keyway



4651A-32
4656A-32

I	II
ON	-
ON	-
ON	OFF
ON	ON

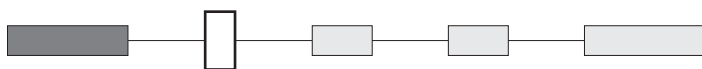




4600 and 4400 series

Toggle switches

CONTACT MATERIALS



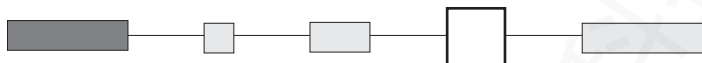
- A** Silver
C Copper, silver plated

ACTUATORS



- Blank** Round, metal lever for 3 pole only
-2 Insulated flat lever (for single and double pole only)
-32 Black insulated round lever (for 3 pole only)

ACTUATOR COLOURS

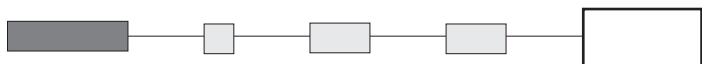


- 1** Blue
2 Black (standard)
3 Green
4 Grey
5 Yellow
6 Red
7/1 White
9 Orange



For insulated flat lever
Black : standard colour - reduced delivery time
Minimum order of 500 pieces for non-standard colours.

APPROVALS



- UU (UL-CSA)** Single and double pole only

Availability : see specifications for details of approved models.

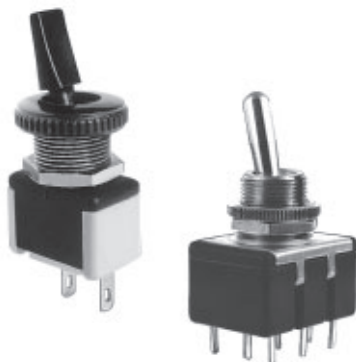
Marking : to order switches marked UL-CSA, complete above box with 'UU'.
Other approvals available as standard, see specifications.

4600 and 4400 series

Toggle switches

Distinctive features and specifications

UG1006-A



- ☐ High current/voltage rating in a small case
- ☐ Butt action contacts
- ☐ Insulated or metal lever
- ☐ UL, CSA and VDE (EN 61058-1) approved

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
 - silver contacts (A) : 4A 250VAC - 6A 125VAC
 - silver plated copper contacts (C) : 2A 250VAC - 3A 125VAC
- Approved electrical ratings : see table below
- Initial contact resistance : 10 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength :
 - 2.000 Vrms 50 Hz min. between terminals
 - 2.500 Vrms 50 Hz min. between poles and between terminals and frame
- Electrical life : 10.000 cycles at full load

APPROVALS	MODELS	POLES	FUNCTIONS	APPROVED RATINGS
UL/CSA	4600A	1-2	1-6-9	3A 250VAC - 6A 125VAC
VDE (EN 61058-1)	4400A	1-2	1-6	4(2)A 250VAC
	4600A	1-2-3	1-6	4(2)A 250VAC

MATERIALS

- Case : melamine phenolic
- Actuator :
 - insulated : polyamide ,6-6
 - non-insulated : brass, nickel plated
- Bushing :
 - insulated : polyamide 6-6
 - non-insulated : brass, nickel plated
- Contacts :
 - A : silver
 - C : copper, silver plated

GENERAL SPECIFICATIONS

- Torque : 0,95 Nm (.70 Ft.lb) max. applied to nut
- Panel thickness : 5 mm (.196) between 2 nuts
- Operating temperature : -20°C to +55°C
- Hand soldering : 270°C max. for 10 seconds max. - iron Ø3 (.118)

AGENCY APPROVALS



EN 61058-1

Availability : see above chart.

Marking : VDE approved models are standard marked.

To order switches marked UL-CSA, complete appropriate box of ordering format.

仅供产品选型使用 4600 and 4400 series

Toggle switches

Overview

MODEL
STRUCTURE



SERIES

Terminals	
4	Straight PC
6	Solder lug and quick-connect
6../8	Quick-connect 4,7 x 0,8 mm

Number of poles	
3	Single pole
4	Double pole
5	Three pole

Electrical functions			
1	ON	-	OFF
6	ON	-	ON
9	ON	OFF	ON

OPTIONS

Contact materials	
A	Silver
C	Copper, silver plated

Actuators	
1 and 2 pole models	
-2	Insulated flat lever Standard
3 pole models	
Blank	Round metal lever
-32	Insulated round lever, black

Actuator colours	
1	Blue
2	Black (std)
3	Green
4	Grey
5	Yellow
6	Red
7/1	White
9	Orange
For SP and DP models only.	

Approvals	
UL	
CSA	
VDE (EN 61058-1)	

ABOUT THIS SERIES

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



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



Sealing boots are available on 3 pole models to protect the switches against dust and water. They are presented in section H.



Mounting accessories : standard hardware supplied with all models : 1 hex nut U166 and 1 knurled nut U520 in the same colour as the lever (insulated models) or U411 nickel plated (metal lever models).
Standard and special hardware available are presented in section I.



Packaging unit : 20 pieces.

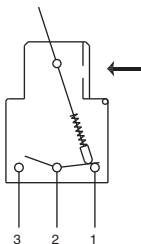
4600 and 4400 series

Toggle switches

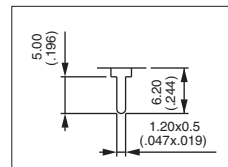
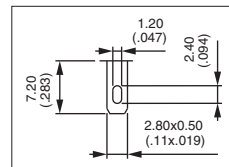
Insulated flat lever

MODEL
STRUCTURE

→ Keyway



- Solder lug/quick-connect terminals 2,8 x 0,5 (.110 x .019)
- Straight PC terminals or quick-connect terminals 4,7 x 0,8 (.185 x .031)
- 2 and 3 maintained positions
- 1 and 2 pole configurations



MODEL
STRUCTURE



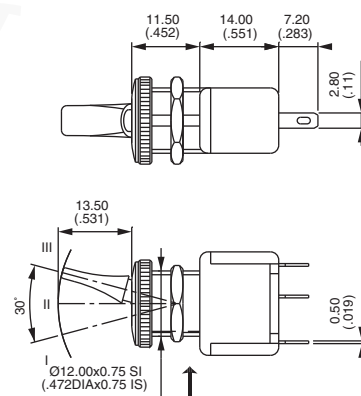
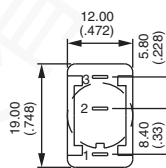
Solder lug/quick-connect terminals - single pole

→ Keyway



4631 -2
4636 -2
4639 -2

III	II	I
ON	-	OFF
ON	-	ON
ON	OFF	ON



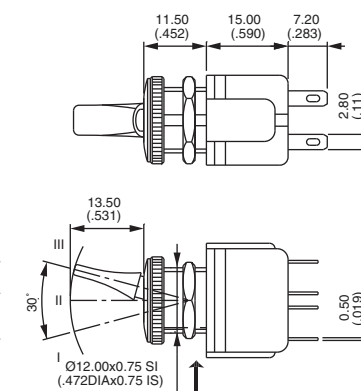
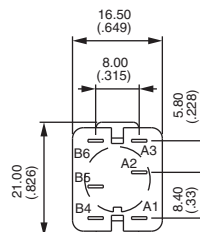
Solder lug/quick-connect terminals - double pole

→ Keyway



4641 -2
4646 -2
4649 -2

III	II	I
ON	-	OFF
ON	-	ON
ON	OFF	ON



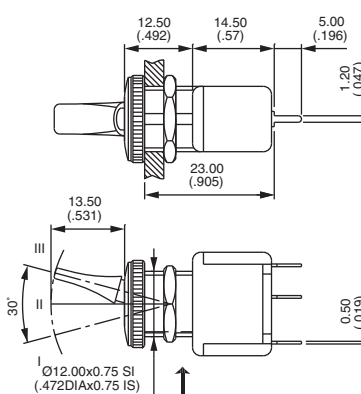
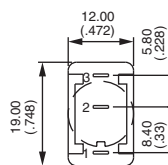
Straight PC terminals - single pole

→ Keyway



4431 -2
4436 -2
4439 -2

III	II	I
ON	-	OFF
ON	-	ON
ON	OFF	ON



4600 and 4400 series

Toggle switches

Insulated flat lever



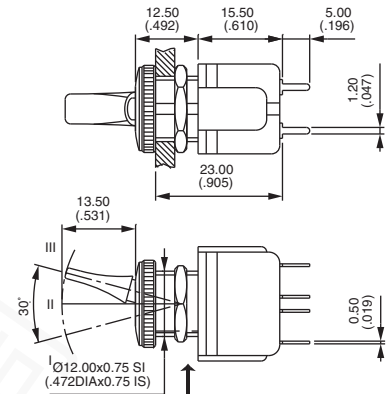
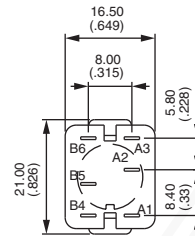
Straight PC terminals - double pole



4441 -2
4446 -2
4449 -2

III	II	I
ON	-	OFF
ON	-	ON
ON	OFF	ON

→ Keyway



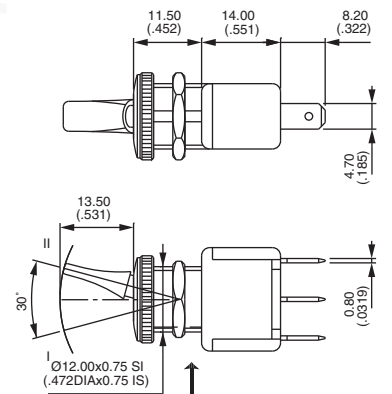
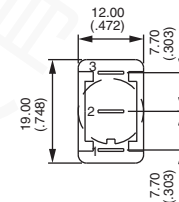
Quick-connect terminals 4,7 x 0,8 (.185 x .031) - single pole



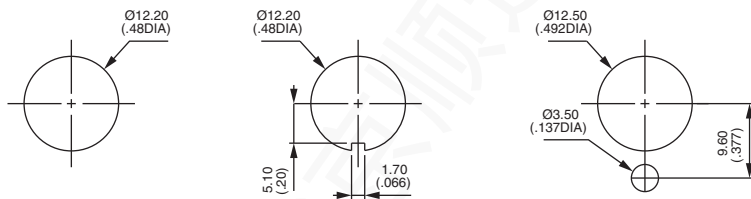
4631/8 -2
4636/8 -2

I	II
ON	- OFF
ON	- ON

→ Keyway



PANEL CUT-OUT



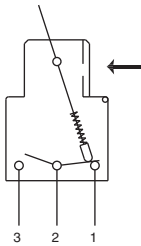
4600 and 4400 series

Toggle switches

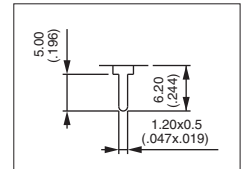
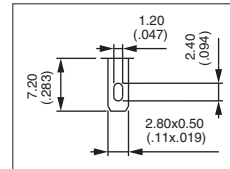
Round lever - three pole

MODEL
STRUCTURE

→ Keyway



- Solder lug or straight PC terminals
- 2 and 3 maintained positions



MODEL
STRUCTURE



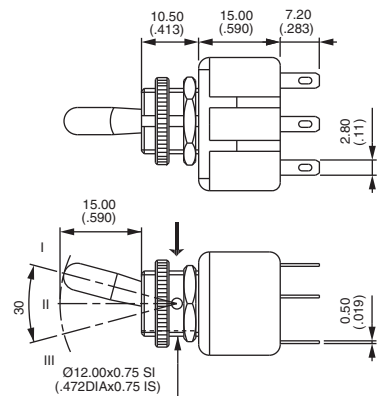
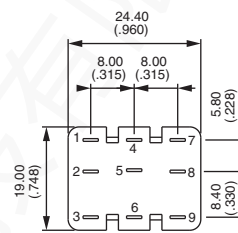
Solder lug terminals - metal lever

→ Keyway



4651
4656
4659

III	II	I
ON	-	OFF
ON	-	ON
ON	OFF	ON



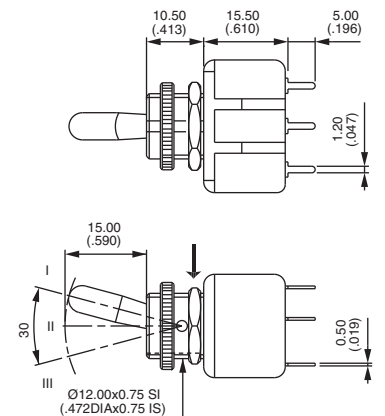
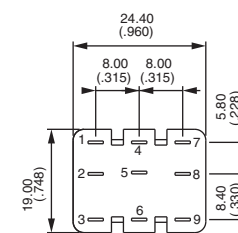
Straight PC terminals - metal lever

→ Keyway



4451
4456
4459

III	II	I
ON	-	OFF
ON	-	ON
ON	OFF	ON



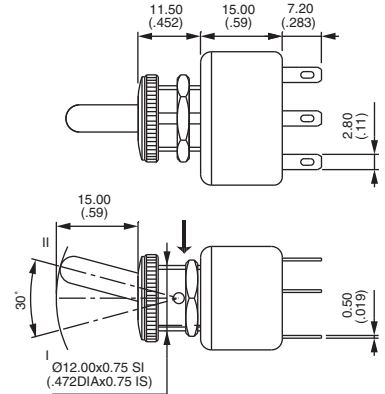
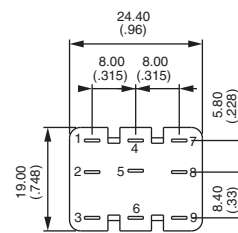
Solder lug terminals - insulated lever - silver contacts

→ Keyway



4651A-32
4656A-32

I	II
ON	-
ON	-
ON	ON

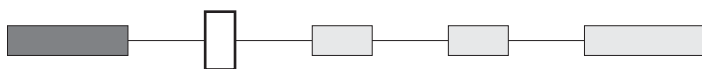




4600 and 4400 series

Toggle switches

CONTACT MATERIALS



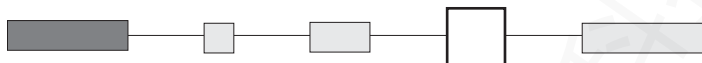
- A** Silver
C Copper, silver plated

ACTUATORS



- Blank** Round, metal lever for 3 pole only
-2 Insulated flat lever (for single and double pole only)
-32 Black insulated round lever (for 3 pole only)

ACTUATOR COLOURS

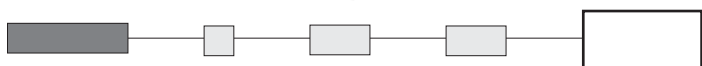


- 1** Blue
2 Black (standard)
3 Green
4 Grey
5 Yellow
6 Red
7/1 White
9 Orange



For insulated flat lever
Black : standard colour - reduced delivery time
Minimum order of 500 pieces for non-standard colours.

APPROVALS



- UU (UL-CSA)** Single and double pole only

Availability : see specifications for details of approved models.

Marking : to order switches marked UL-CSA, complete above box with 'UU'.
Other approvals available as standard, see specifications.

6000 series

Toggle switches for military applications

Distinctive features and specifications

UG1006-A

- ☐ Suitable for military or industrial applications
- ☐ Sealing and locking lever options available
- ☐ Matt black finish on actuator and bushing

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating : see table below
- Initial contact resistance : 10 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength :
2.000 Vrms 50 Hz min. between terminals
3.000 Vrms 50 Hz min. between terminals and frame
- Electrical life : 10.000 cycles at full load

CURRENT/VOLTAGE RATING	
	30VDC
Resistive load	6,5A
Inductive load	5A
Lamp load	3A

MATERIALS

- Case : diallylphthalate (DAP)
- Actuator : brass, chrome plated, black
- Bushing : brass, chrome plated, black
- Contacts : **A** : silver

GENERAL SPECIFICATIONS

- Torque : 1,50 Nm (1.10 Ft.lb) max. applied to nut
- Panel thickness : 5 mm (.196) max.
- Operating temperature : -40°C to +85°C

ABOUT THIS SERIES

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

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



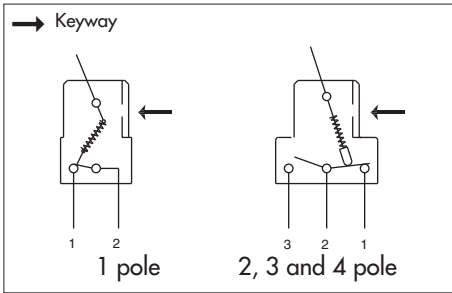
Sealing boots are available to protect the switches against dust and water. They are presented in section H.



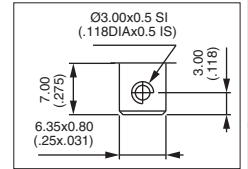
Mounting accessories : standard hardware supplied with all models : 2 matt black nuts U41, matt black locking ring U12, zinc plated lockwasher U13
They are presented in section I.



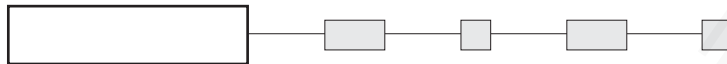
Packaging unit : 25 pieces, except model 6421 (20 pieces)



- Screw terminals standard
- Solder lug or quick-connect terminals optional
- 1, 2, 3 and 4-pole configurations



MODEL STRUCTURE



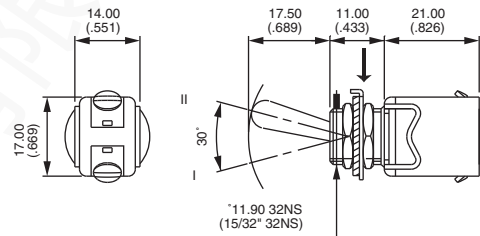
Single pole

→ Keyway



6421A-03

I	II
ON	OFF



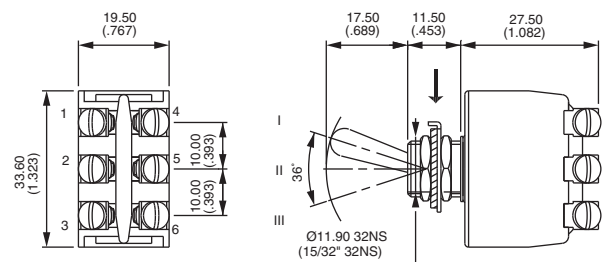
Double pole

→ Keyway



6641-03
6642-03
6643-03
6644-03 ▲
6645-03
6646-03
6647-03
6648-03
6649-03

III	II	I
2-1		2-3
5-4		5-6
ON	-	OFF
ON	-	mom.OFF
MOM	-	OFF
ON	ON	ON
MOM	-	ON
ON	-	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	OFF	ON



▲ Function 4 : SP in DP case, see end of catalogue.

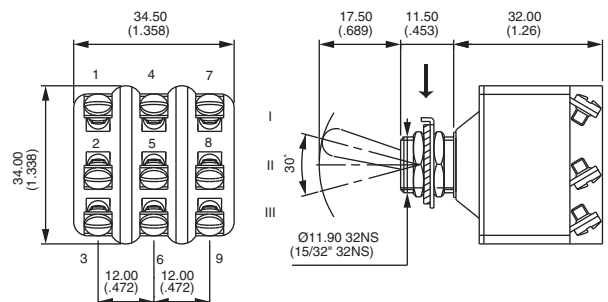
Three pole

→ Keyway



6651-03
6652-03
6653-03
6655-03
6656-03
6657-03
6658-03
6659-03

III*	II	I**
ON	-	OFF
ON	-	mom.OFF
MOM	-	OFF
MOM	-	ON
ON	-	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	OFF	ON



* (2-1) (5-4) (8-7) ** (2-3) (5-6) (8-9)

6000 series

Toggle switches for military applications

OPTIONS
● ● ●

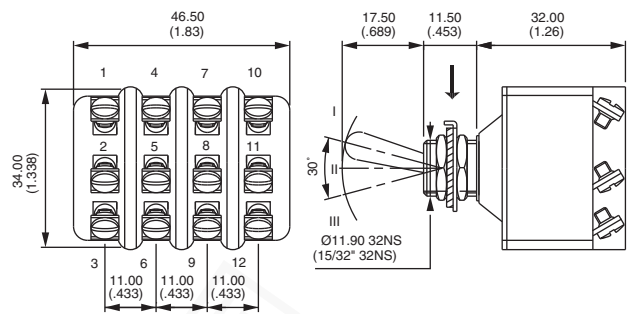
Four pole

→ Keyway



6661-03
6662-03
6663-03
6664-03 ▲
6665-03
6666-03
6667-03
6668-03
6669-03

III*	II	I**
ON	-	OFF
ON	-	mom.OFF
MOM	-	OFF
ON	ON	ON
MOM	-	ON
ON	-	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	OFF	ON

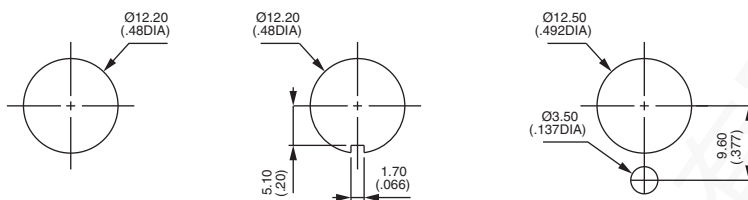


* (2-1) (5-4) (8-7) (11-10)

** (2-3) (5-6) (8-9) (11-12)

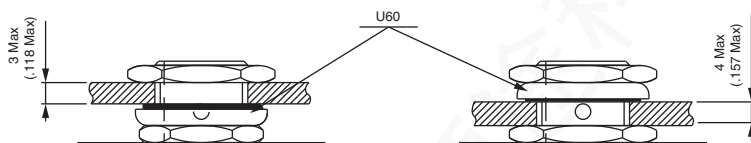
▲ Function 4 : 2P in 4P case, see end of catalogue.

STANDARD PANEL CUT-OUT



PANEL CUT-OUT WITH "K" SEALING

Recommended cut-out and mounting depending on panel thickness



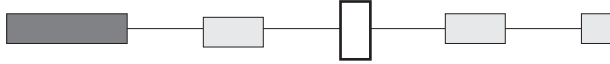
FINISH



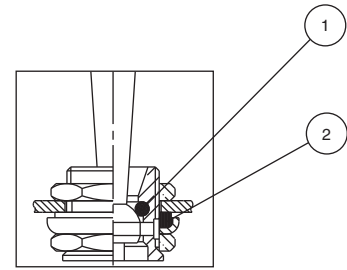
- B** Lever and bushing with grey satin chrome finish
- LM** Nickel plated bushing - lever and upper nut bright chrome plated
- 8** Matt black lever with fluorescent tip



SEALING



- K** Frontal 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

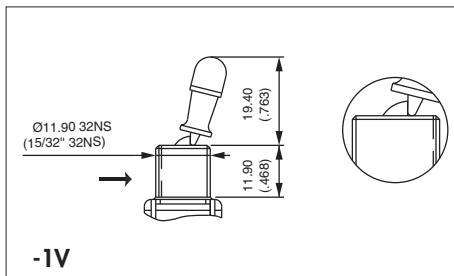


① O-ring ② Sealing washer

LOCKING LEVERS

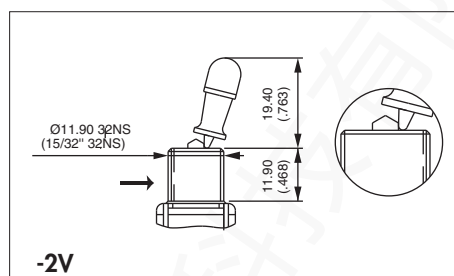


→ Keyway



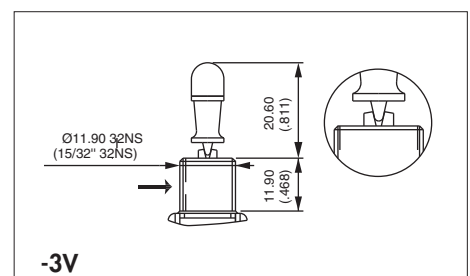
-1V

1 locked position



-2V

2 locked positions



-3V

3 locked positions

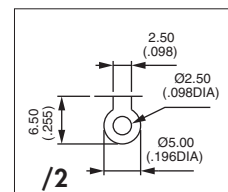
TERMINALS



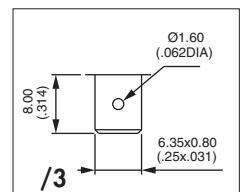
- Blank** Screw terminals
- /2** Solder lug terminals
- /3** Quick-connect terminals 6,35 x 0,8 (.250 x .031)



Not available on single pole models.



/2



/3

NEOPRENE PROTECTION CAPS

These caps are designed to insulate terminals against electrical short circuit.



For 1-pole models

U58

For 2-pole models

U120

For 3-pole models

U46

For 4-pole models

U47

To be ordered separately. Example : PROTECTION CAP U58

10600 series

仅供产品选型使用

Professional toggle switches - threaded bushing Ø 10 (.393)

Distinctive features and specifications

UG1006-A

☐ CECC approved

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
2A 220VAC - 3A 110VAC - 3A 24VDC
- Minimum load : 100µA 10mV
- Initial contact resistance : 10 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength :
1.000 Vrms 50 Hz min. between terminals of the same pole
2.000 Vrms 50 Hz min. between terminals and frame
2.000 Vrms 50 Hz min. between terminals of adjacent poles
- Electrical life : 50.000 cycles

MATERIALS

- Case : diallylphthalate (DAP) or high temperature plastic material (UL94-V0)
- Actuator : brass, nickel plated
- Bushing : brass, nickel plated
- Housing : stainless steel
- Contacts :
 - silver
 - silver, gold plated
- Terminal seal : epoxy

HOMOLOGATION



CECC 96201-007

Availability : consult factory for details of approved models.

Marking : to order switches marked CECC, add "CECC" to model number.

GENERAL SPECIFICATIONS

- Torque : 1,50 Nm (1.106 Ft.lb) max. applied to nut
- Max. panel thickness :
4 mm (.157)
- Operating temperature :
-40°C to +85°C

ABOUT THIS SERIES

Complete part numbers are shown on the following pages.

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.

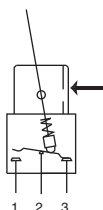


Mounting accessories : standard hardware supplied with all models : 1 knurled cap nut, 1 hex nut, 1 locking ring and 1 lockwasher. They are presented in section I.

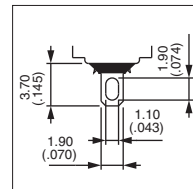


Packaging unit : 25 pieces.

→ Keyway



- Solder lug terminals
- 2 and 3 positions
- 1 and 2 pole configurations
- Available with matt black finish :
consult factory for model number



2 positions - single pole



Silver contacts

106362103

106322103

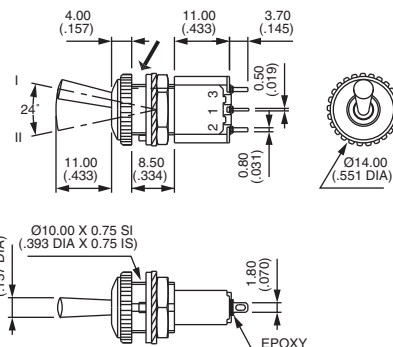
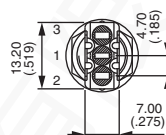
Gold plated silver contacts

106361175

106321175

II	I
1-3	1-2
ON - ON	ON - MOM
ON - ON	ON - MOM

→ Keyway



2 positions - double pole



Silver contacts

106462103

106422103

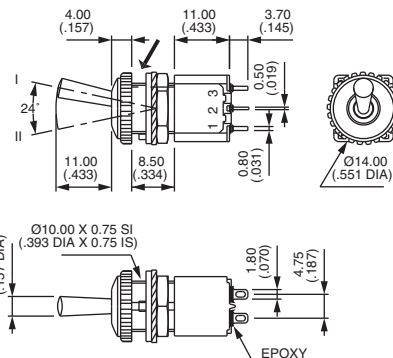
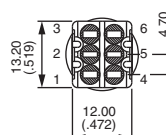
Gold plated silver contacts

106461175

106421175

II	I
2-3	2-1
5-6	5-4
ON - ON	ON - MOM
ON - ON	ON - MOM

→ Keyway



3 positions - single pole



Silver contacts

106392103

106372103

106382103

Gold plated silver contacts

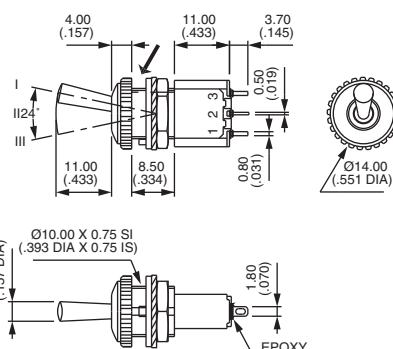
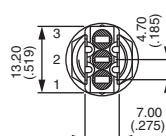
106391175

106371175

106381175

III	II	I
2-3		2-1
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM

→ Keyway



10600 series

Professional toggle switches - threaded bushing Ø 10 (.393)

3 positions - double pole

III	II	I
2-3		2-1
5-6		5-4

→ Keyway



Silver contacts

106492103

106472103

106482103

106440886*

ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	ON	ON
	(2-3)	
	(5-4)	

Gold plated silver contacts

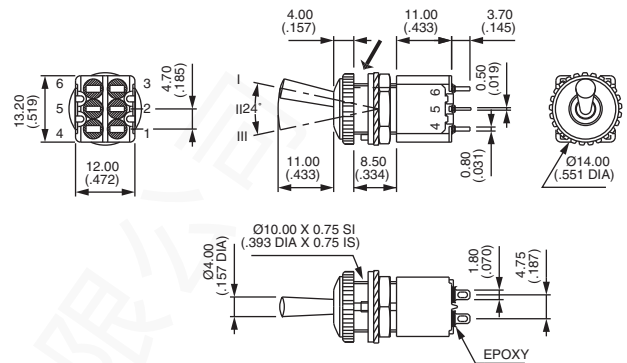
106491175

106471175

106481175

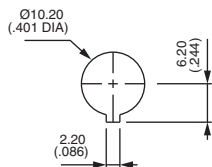
106440944*

ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	ON	ON
	(2-3)	
	(5-4)	



* Function 4 : SP in DP case. See Positions and Connections type TH, end of catalogue.
Jumper between terminals 2 and 4 to be wired by the user.

PANEL CUT-OUT



UG1006-A



- ☐ Available with threaded or plain bushing, both with mounting plate
- ☐ Low profile - same height for single and double pole
- ☐ Wave solderable only

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
 - silver contacts (A) : 2A 250VAC - 4A 125VAC - 4A 30VDC
 - gold plated brass contacts (LD) : 100mA 30VDC
- Minimum load :
 - silver contacts (A) : 100mA 10V
 - gold plated brass contacts (LD) : 10 μ A 5VDC - 10mA 50mV
- Initial contact resistance : 20 m Ω max.
- Insulation resistance : 1.000 M Ω min. at 500VDC
- Dielectric strength :
 - 1.000 Vrms 50 Hz min. between terminals
 - 2.000 Vrms 50 Hz min. between poles
 - 2.000 Vrms 50 Hz min. between terminals and frame
- Electrical life at full load :
 - silver contacts (A) : 20.000 cycles
 - gold plated brass contacts (LD) : 50.000 cycles
- Low level or mechanical life : 100.000 cycles

MATERIALS

- Case and cover : PBT
- Actuator : brass, nickel plated
- Bushing : brass, nickel plated
- Contacts
 - A : silver
 - LD : brass, gold plated

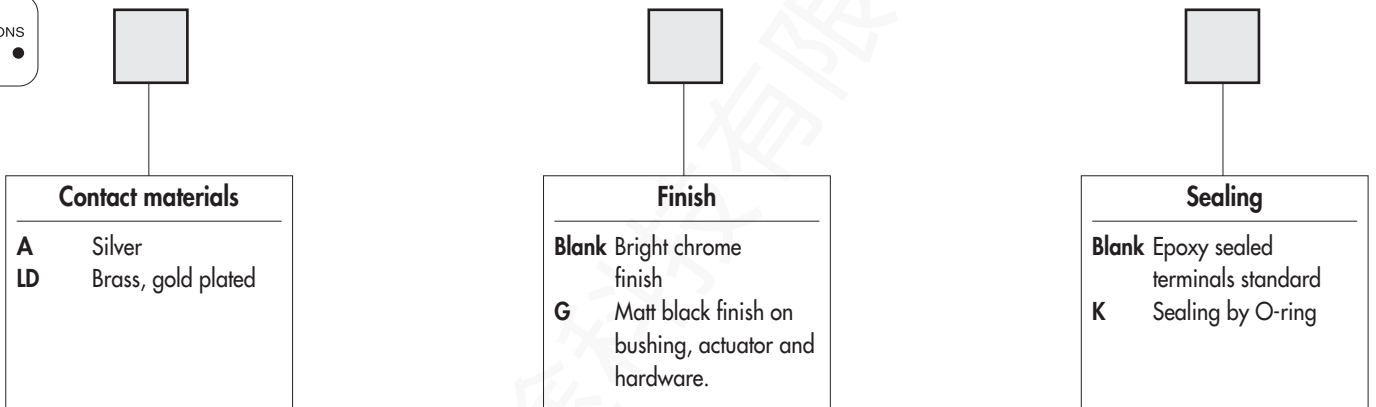
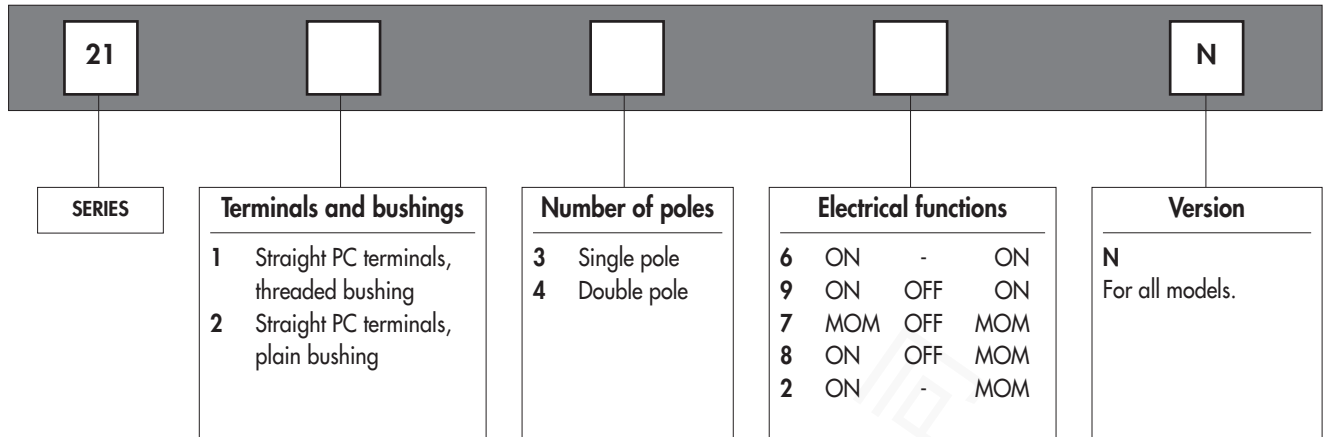
GENERAL SPECIFICATIONS

- Operating temperature : -40°C to +85°C

21000N series

Low profile toggle switches

Overview



ABOUT THIS SERIES

On the following pages, you will find successively :

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

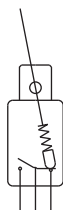
Dimensions : first dimensions are in mm while inches are shown as bracketed numbers.



Mounting accessories : standard hardware supplied with all models with threaded bushing : 2 hex nuts 8 mm (.314) across flats. Standard and special hardware available are presented in section I.

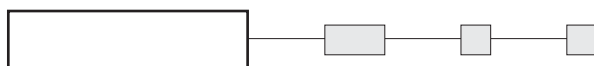


Packaging unit : 50 pieces for SP models, 25 pieces for DP.



- Epoxy sealed terminals standard
- 1 and 2 pole configurations

MODEL STRUCTURE

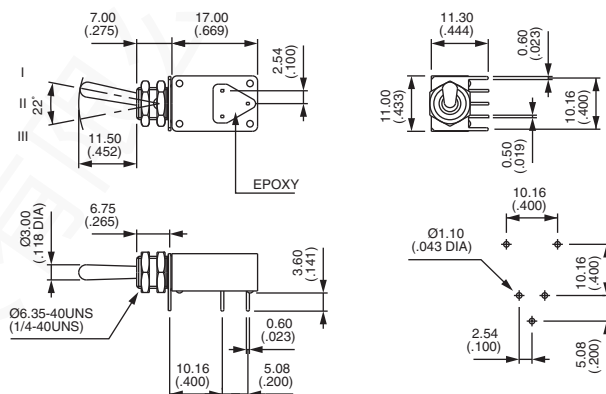


Threaded bushing - single pole



21136N
21139N
21137N
21138N
21132N

III	II	I
2-3		1-2
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM

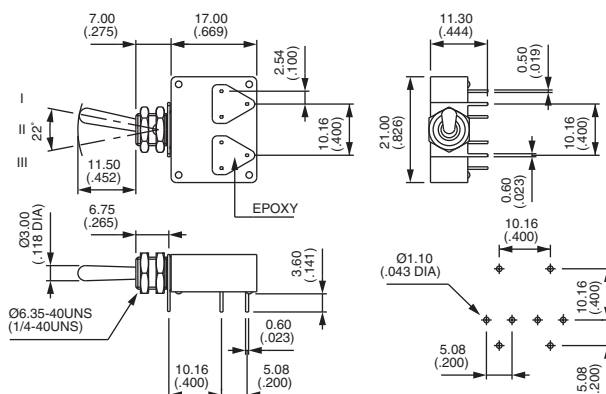


Threaded bushing - double pole



21146N
21149N
21147N
21148N
21142N

III	II	I
2-3		1-2
5-6		4-5
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM

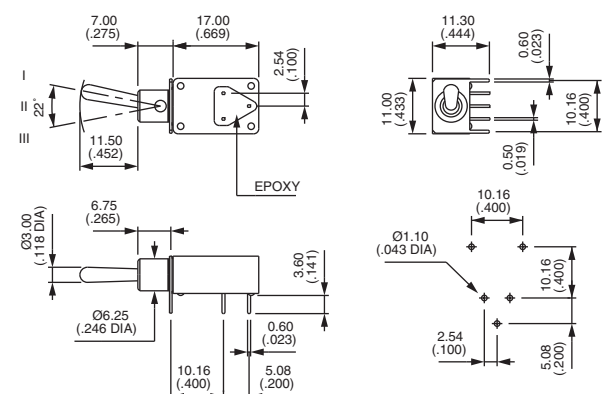


Plain bushing - single pole



21236N
21239N
21237N
21238N
21232N

III	II	I
2-3		1-2
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM



仅供产品选型使用

MODEL STRUCTURE

A



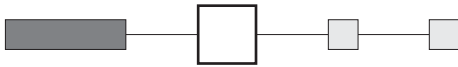
III	II	I
2-3		1-2
5-6		4-5
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM



Function 6	ON	-	ON
Function 9	ON	OFF	ON
Function 7	MOM	OFF	MOM
Function 8	ON	OFF	MOM
Function 2	ON	-	MOM

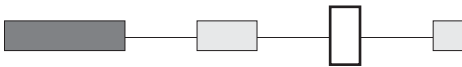


CONTACT MATERIALS



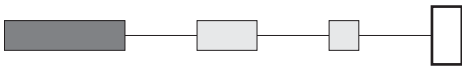
- A** Silver
- LD** Brass, gold plated

FINISH



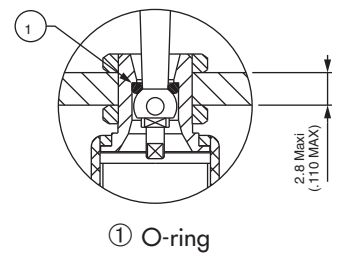
- Blank** Bright chrome finish on actuator, nickel plating for bushing and hardware.
- G** Matt black finish on bushing, actuator and hardware

SEALING



Epoxy sealed terminals are standard.

- Blank** No sealing except standard.
- K** Bushing internally sealed by one O-ring (version without washer U360). Protects the switch against water and dust.



55000 series

VDE approved toggle switches

仅供产品选型使用

MODEL
STRUCTURE



EN 61058-1



• The switches described below are marked VDE as standard.

UG1006-A

• UL and CSA agency approvals are also available. To order a switch marked UL or CSA, please complete "Other agency approvals" box.

ELECTRICAL SPECIFICATIONS

- Class I (normal insulation)
- Small contact opening : μ (< 3 mm (.118))
- Current/voltage rating with resistive load : 3A 250VAC - 6A 125VAC
- Dielectric strength :
2.000 Vrms 50 Hz min. between poles and between terminals and frame
1.000 Vrms 50 Hz min. between terminals
- Special body for increased creepage distance and air gap : 3 mm (.118)

GENERAL SPECIFICATIONS

- Insulating cap, compulsory, supplied glued on the lever :
U270 for models 55600A, 55200A and 55200ZA
U1040 for models 55200WA and 55200WA X433
- Ground connector :
U721 compulsory if the panel is not metallic or not connected to ground
- Epoxy sealed terminals standard

MATERIALS

- Contacts : silver
- Case : diallylphthalate (DAP)
- Actuator : brass, chrome plated with insulating vinyl cap
- Bushing : brass, nickel plated
- Housing : stainless steel
- Terminal seal : epoxy

Further specifications, see 5000 series.

MODEL STRUCTURE



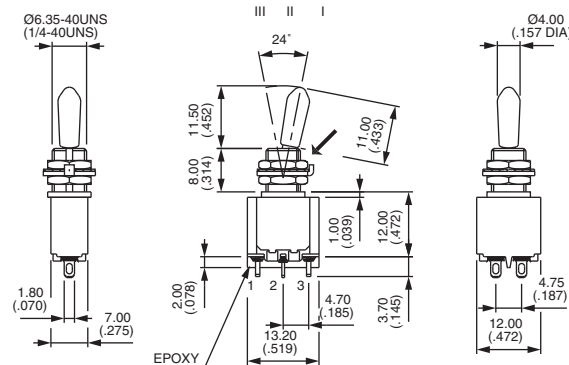
Solder lugs

→ Keyway

III	II	I
2-3		1-2
5-6		4-5

Single pole Double pole

55636A	55646A	ON	-	ON
55639A	55649A	ON	OFF	ON



Also available with $\varnothing 6$ mm (.236) bushing : 55500.

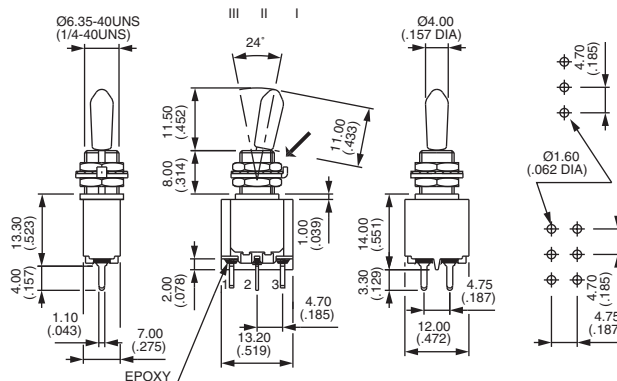
Straight PC terminals

→ Keyway

III	II	I
2-3		1-2
5-6		4-5

Single pole Double pole

55236A	55246A	ON	-	ON
55239A	55249A	ON	OFF	ON



Also available with $\varnothing 6$ mm (.236") bushing : 55100.

Right angle terminals - horizontal

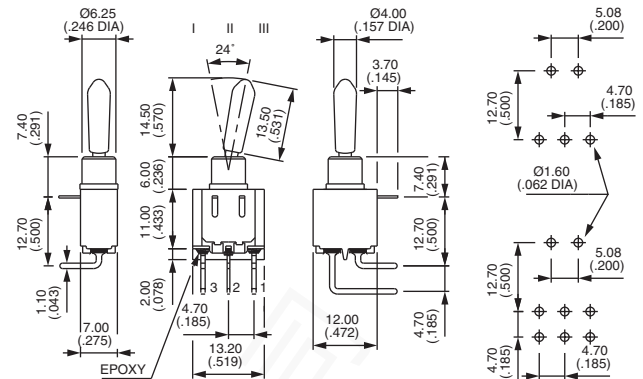
III	II	I
2-3		1-2
5-6		4-5

Single pole Double pole*

55236WA	55246WA X433	ON	-	ON
55239WA	55249WA X433	ON	OFF	ON

"X433" to be placed in the third box of ordering format.

Also available for VERTICAL mounting (on request).



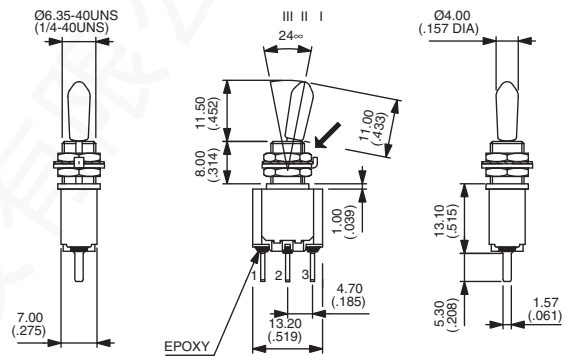
Quick-connect terminals

→ Keyway

III	II	I
2-3		1-2

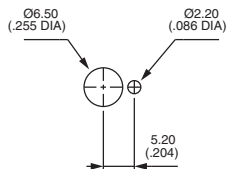
Single pole

55236Z	ON	-	ON
55239ZA	ON	OFF	ON

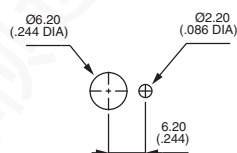


PANEL CUT-OUT

Bushing Ø 6,35 (1/4)

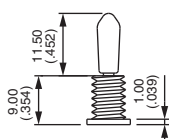


Bushing Ø 6 (.236)



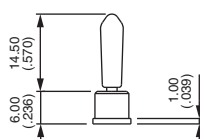
* In double pole W models, spacing between poles on PCB is different from standard : 4,7 mm (.185) instead of 3,81 mm (.150)

LEVERS



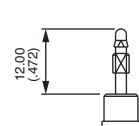
Blank

For threaded bushing models
Cap U270 compulsory



Blank

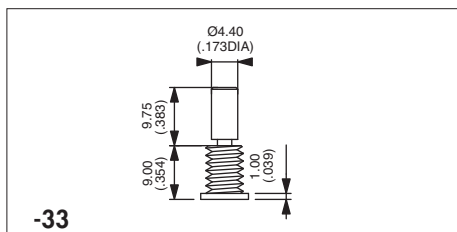
For plain bushing models
Cap U1040 compulsory



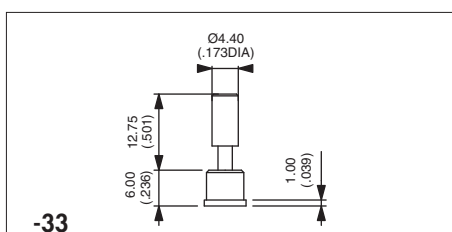
-4N

For use with paddles only

LEVERS (continued)



For threaded bushing models



For plain bushing models

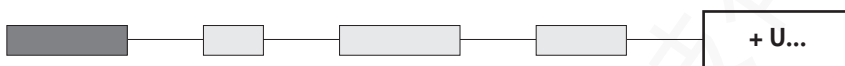
OTHER AGENCY APPROVALS



UL
CSA

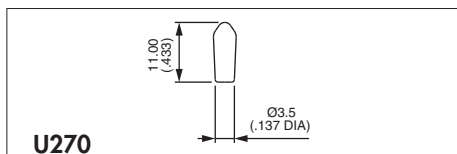
To order a switch additionally marked UL and/or CSA, complete above box with desired approvals (ex. ULCSA).

INSULATING CAPS AND PADDLES

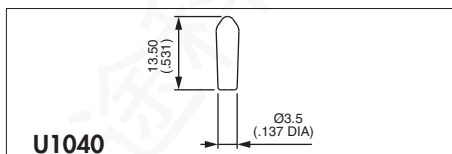


Insulating caps

Compulsory - delivered assembled on the lever - not available in ivory colour



For threaded bushing models



For plain bushing models

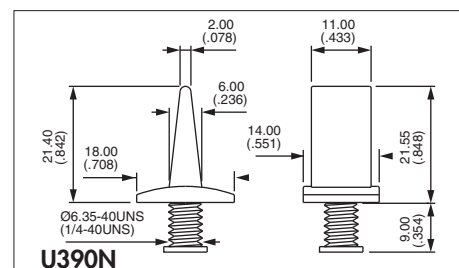
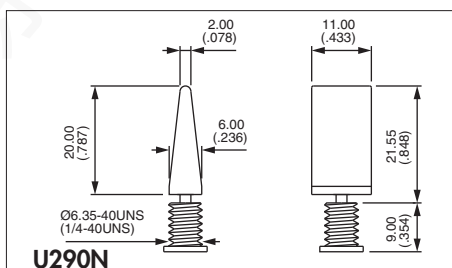
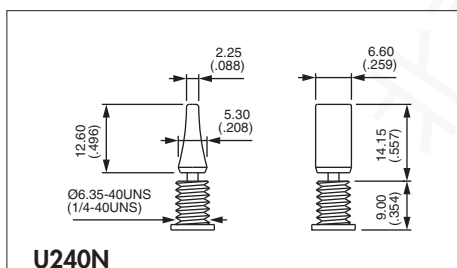
Cap/paddle colours

Replace last "0" by number

- | | |
|-----|-----------|
| 1 | blue |
| 1/4 | dark blue |
| 2 | black |
| 3 | green |
| 4 | grey |
| 5 | yellow |
| 7 | ivory |
| 7/1 | white |
| 9 | orange |

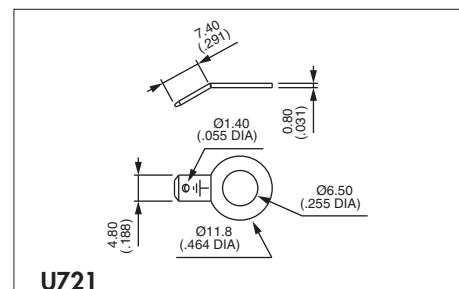
Paddles

For use with lever 4N only. Shown with threaded bushing. Order separately.



GROUND CONNECTOR

IMPORTANT : compulsory on models with threaded bushing if the panel is not metallic or not connected to ground. Order separately.





☐ Entirely designed for surface mount

☐ Tape and reel packaging

☐ Reflow solderable

- High temperature plastic materials
- Tin plated ground plate
- Terminal coating : tin alloy over nickel plating
- Terminals turned to the outside, preventing the shadow effect in infrared soldering and permitting visual inspection of solder joints
- Distance between case and circuit : 0,55 mm (.021)
- End stackable with 10,16 mm (.40) pitch
- Available with positioning pins to ensure switch orientation during the reflow process and increasing switch mechanical resistance

☐ Protected against electrostatic discharges (ESD) up to 10 KV

☐ Washable

Construction withstands cleaning processes, including hot water under pressure

UG1006-A

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load : 0,4VA 20V max. AC or DC
- Minimum load : 10mA 50mV or 10 μ A 5VDC
- Initial contact resistance : 20 m Ω max
- Insulation resistance : 1.000 M Ω min. at 500VDC
- Dielectric strength : 1.000 Vrms. 50 Hz min. between terminals and frame
- 500 Vrms. 50 Hz min. between terminals
- Electrical life at full load :
 - 2 position switches : 60.000 cycles
 - 3 position switches : 30.000 cycles
- Static resistance : 10 KV (Schaffner equipment)

GENERAL SPECIFICATIONS

- Operating temperature : -40°C to +85°C
- Moisture resistance : 21 days per IEC 512-6 test 11c
- Vibration resistance : 10-500 Hz / 10 g per IEC 512-4 test 6d
- Shock resistance : 50 g per IEC 512-4 test 6c

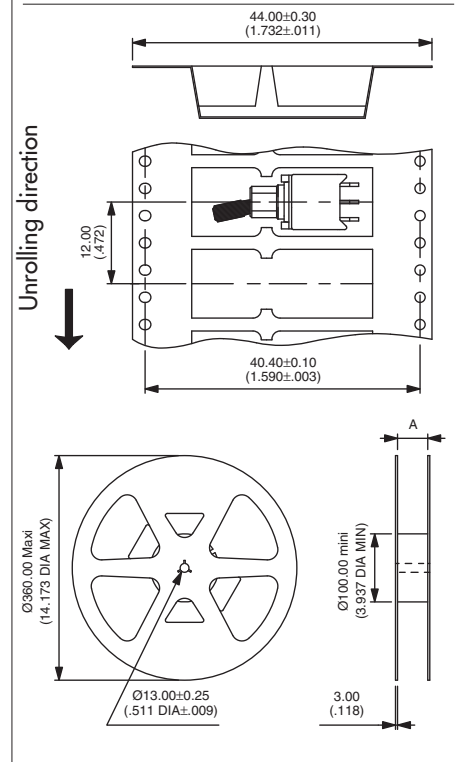
MATERIALS

- Case : high temperature plastic material UL94-V0
- Actuator : brass, nickel plated, with high temperature UL94-V0 plastic cap
- Ground plate and positioning pins : steel, tin plated
- Contacts : brass, gold plated
- Terminals : brass, with pure tin plating over nickel barrier

SOLDERING AND CLEANING

- Reflow soldering : infrared, vapor phase or infrared convection
- Washable per IEA-RS448-2 :
 - water + detergent - preferred
 - solvents
- Further information on reflow soldering : see end of catalogue.

PACKAGING



Tape width	24.00 (.944)	44.00 (1.732)
Reel (dimension A)	24.40±2.00/0.00 (.960±.078/.000)	44.40±2.00/0.00 (1.748±.078/.000)

Standard packaging unit : 700 pieces
Tape meeting international standard IEC - Publication 286-3 (EIA481A)
Start leader : 400 mm min.

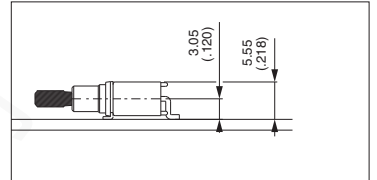
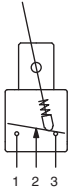
Dimensions : First dimensions are in mm while inches are shown as bracketted numbers.

SMT TL series

Surface mount tiny washable toggle switches

- With or without positioning pins
- Single pole

Also available for vertical mounting. On request.

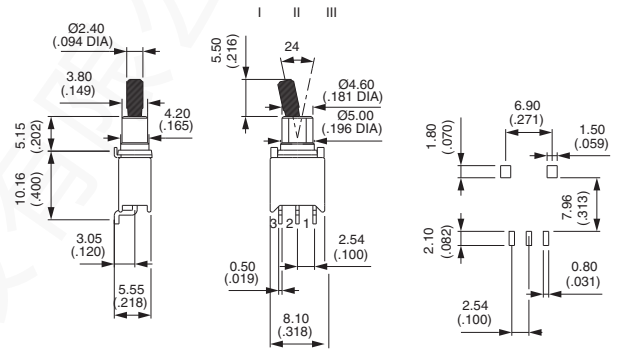


Without positioning pins



TL36WS84000
TL39WS84000
TL37WS84000
TL38WS84000
TL32WS84000

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

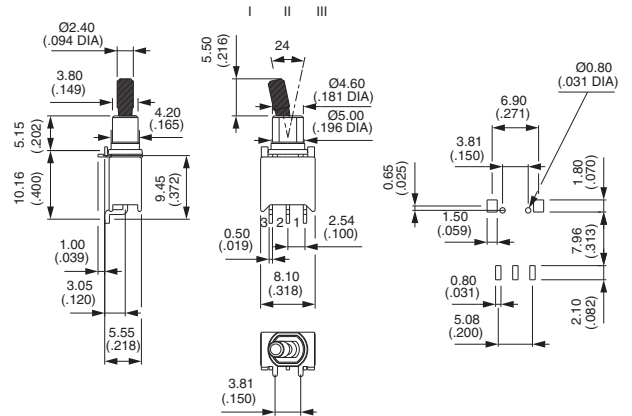


With positioning pins

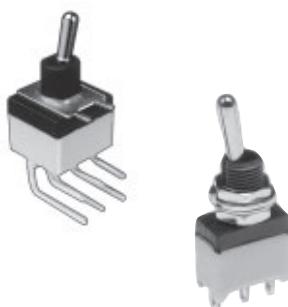


TL36WS84065
TL39WS84065
TL37WS84065
TL38WS84065
TL32WS84065

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



UG1006-A



☐ Sealed

- Secure assembly of the two case parts
- Internally sealed bushing
- Epoxy sealed terminals

☐ Process compatible (S series)

- Wave solderable
- Washable

☐ Optional ESD protection

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
 - silver contacts (A or 1) : 2A 250VAC - 5A 125VAC - 4A 30VDC
 - gold plated brass contacts (CD or 0) : 0,4VA 20VAC or DC
 - gold plated silver contacts (AD or 2) : 2A 250VAC - 5A 125VAC - 4A 30VDC (300mA 30VDC for gold plating)
- Initial contact resistance : 10 mΩ max.
- Insulation resistance : 1.000 MΩ min.
- Dielectric strength : 1.000 Vrms 50 Hz min.
- Electrical life at full load :

Contacts	Number of cycles	
	2 positions	3 positions
A or 1	40.000	40.000
CD or 0	100.000	50.000
AD or 2	40.000	40.000

MATERIALS

- Case and cover : UL94-VO, polyamide, glass filled or PES
- Actuator : brass, nickel plated
- Contacts
 - CD or 0** : brass, gold plated
 - A or 1** : silver
 - AD or 2** : silver, gold plated
- Terminal seal : epoxy

GENERAL SPECIFICATIONS

- Mechanical strength :
 - Terminals are strengthened by a bracket or a ground plate ensuring the rigidity of the switch on the board.
 - Actuator strength is 10N max.
- Operating temperature : -20°C to +85°C
- Storage temperature : -40°C to +85°C
- Moisture :
 - The insulating materials employed and the complete seal permit the switches to withstand a 56 days moisture test (IEC 68-2-3).
- Soldering - thermal shock (S series only) :
 - The switches are especially designed for flow soldering at 260°C during 5 seconds owing to high temperature polymer parts.
- Iron soldering (SF series) : 300°C 5 sec. max.
- Solderability : The switches are tested at 235°C according to IEC 68-2-20 after accelerated aging.

AGENCY APPROVALS



CECC 96201-006

Availability : consult factory for details of approved models.

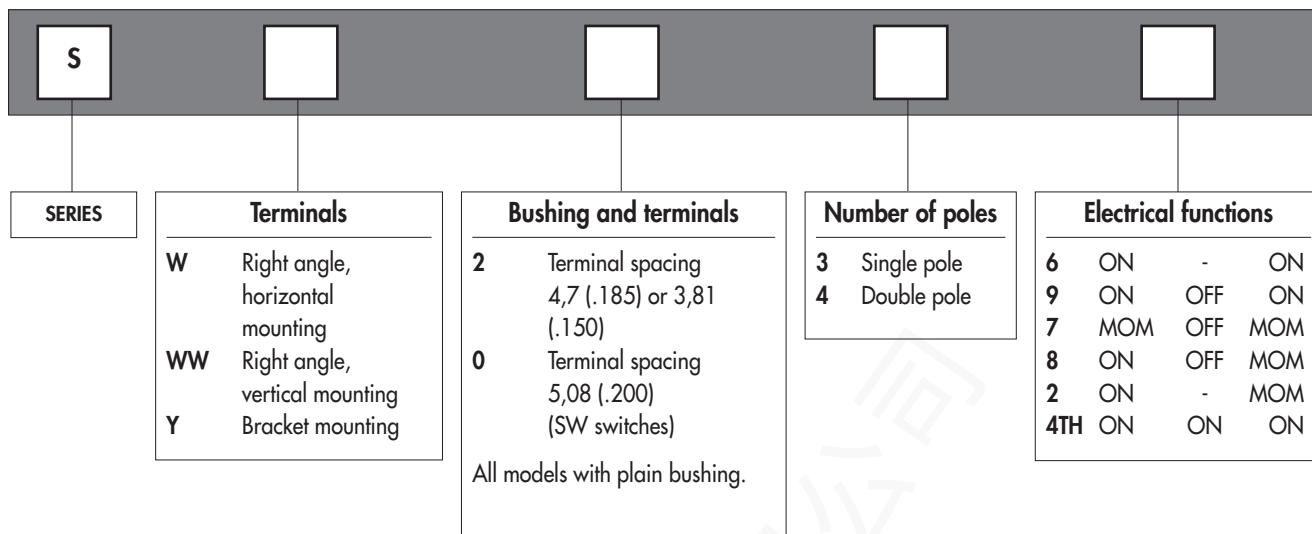
Marking : to order switches marked UL or CECC, complete appropriate box of ordering format.

S series

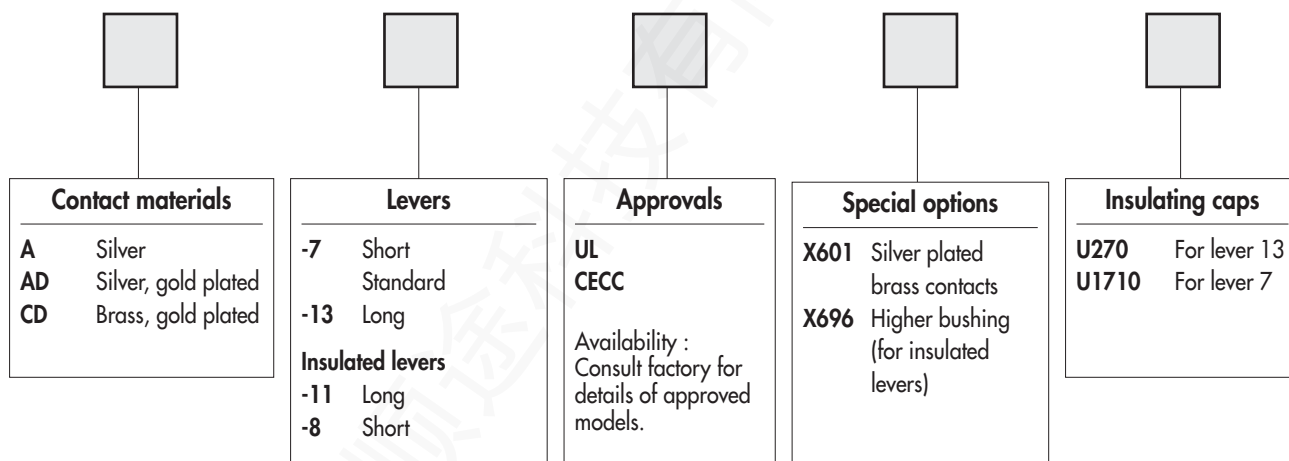
Washable toggle switches - plain bushing

Overview

MODEL STRUCTURE



OPTIONS



ABOUT THIS SERIES

On the following pages, you will find successively :

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

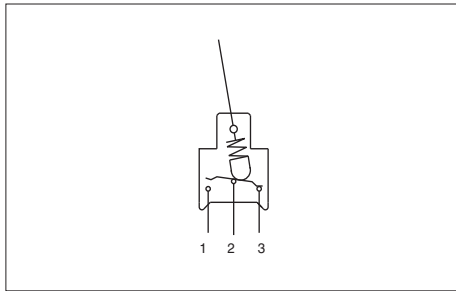
Dimensions : first dimensions are in mm while inches are shown as bracketted numbers.



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



Packaging unit : 50 or 25 pieces depending on model.



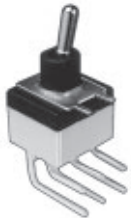
- Straight PC or right angle terminals
- Terminal spacing 4,7 (.185) or 5,08 (.200) on SW switches
- 1 and 2 pole configurations

MODEL
STRUCTURE



Shown with lever (-7)

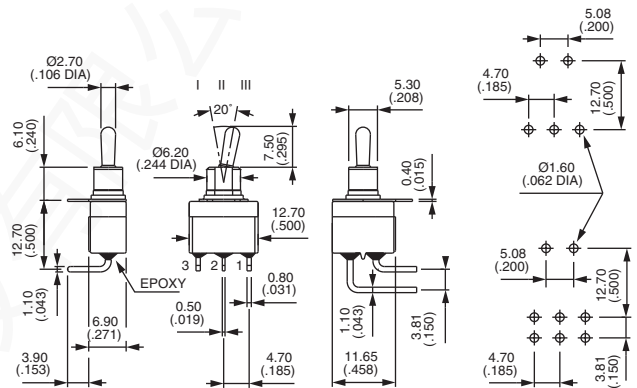
Right angle terminals - horizontal - spacing 4,7 (.185)



Single pole Double pole

SW236	SW246
SW239	SW249
SW237	SW247
SW238	SW248
SW232	SW242
	SW244TH*

III	II	I
2-3		2-1
5-6		4-5
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM
ON	ON	ON



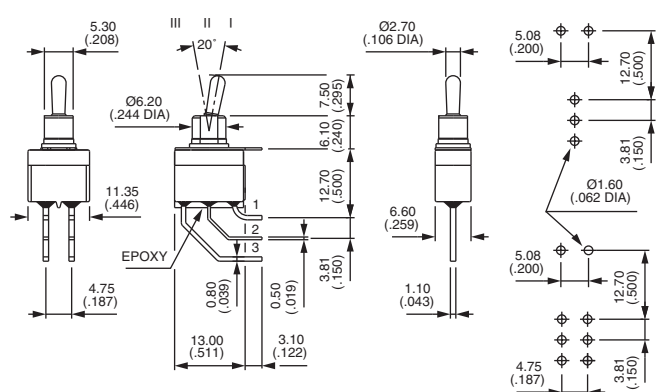
Right angle terminals - vertical



Single pole Double pole

SWW236	SWW246
SWW239	SWW249
SWW237	SWW247
SWW238	SWW248**
SWW232	SWW242**
	SWW244TH*

I	II	III
2-3		2-1
5-6		4-5
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM
ON	ON	ON



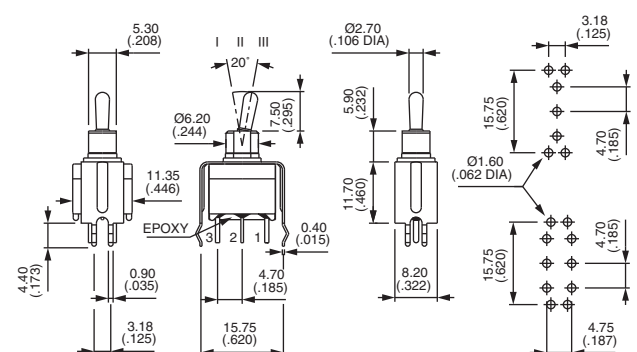
Bracket mounting



Single pole Double pole

SY236	SY246
SY239	SY249
SY237	SY247
SY238	SY248
SY232	SY242
	SY244TH*

III	II	I
2-3		2-1
5-6		4-5
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM
ON	ON	ON



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

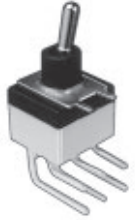
** Functions 2 and 8 : reversed connection available. Consult factory.

S series

Washable toggle switches - plain bushing

MODEL
STRUCTURE

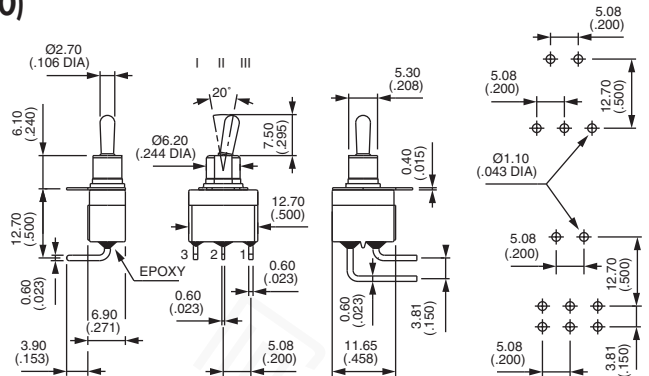
Right angle terminals - horizontal - spacing 5,08 (.200)



Single pole Double pole

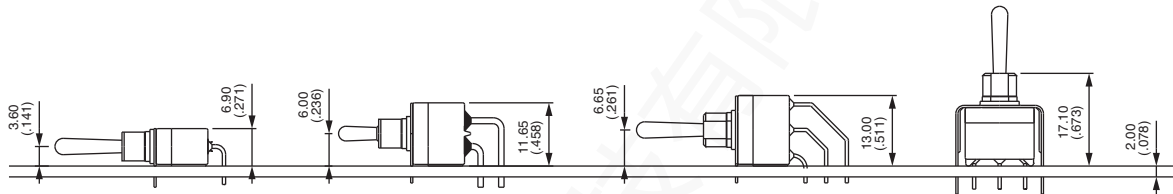
SW036 SW046
SW039 SW049
SW037 SW047
SW038 SW048
SW032 SW042
SW044TH*

III	II	I
2-3		2-1
5-6		4-5
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM
ON	ON	ON



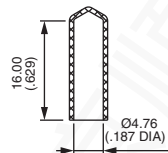
* Function 4 : SP in DP case, see end of catalogue.

PCB MOUNTING



CAP FOR PCB PROCESSING

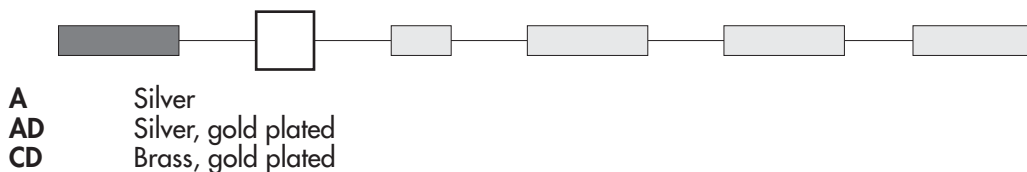
Provide additional protection during PCB processing.
Supplied mounted on the switch or separately.
Material : vinyl



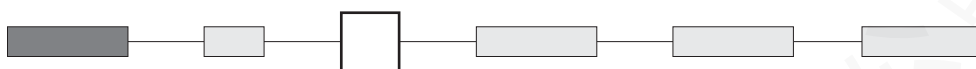
U3012



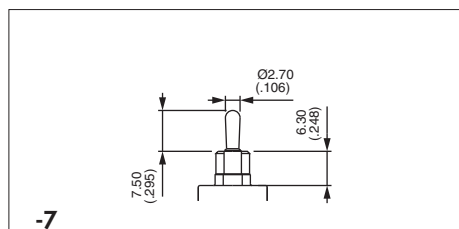
CONTACT MATERIALS



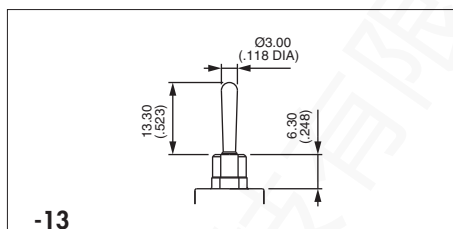
LEVERS



Dash compulsory before lever code.



-7
Standard



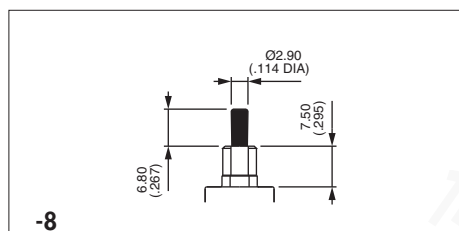
-13
Long



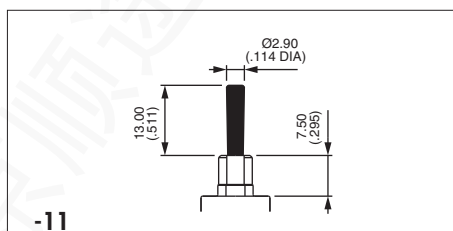
If actuator not specified, we supply former default option -13.

Insulated levers

Protected against electrostatic discharges (ESD) up to 12 KV. Black colour.



-8
Short



-11
Long



To combine with option X696.

SPECIAL OPTIONS



X601 Silver plated brass contacts
 Lower rating - Minimum quantity : 5.000 pieces per model and shipment.

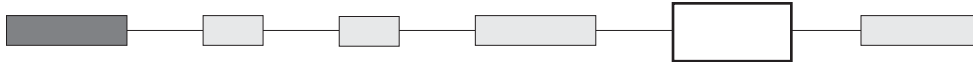
X696 Higher bushing 7,50 (.295). Compulsory for insulated levers 11 and 8.

S series

Washable toggle switches - plain bushing

OPTIONS
● ● ●

AGENCY APPROVALS

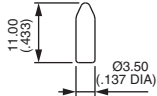
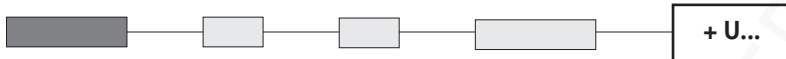


UL
CECC

Availability : consult factory for details of approved models.

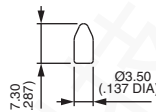
Marking : to order switches marked UL or CECC, please complete above box with desired approvals.
Blank : no agency approval required.

INSULATING CAPS



U270

For lever 13



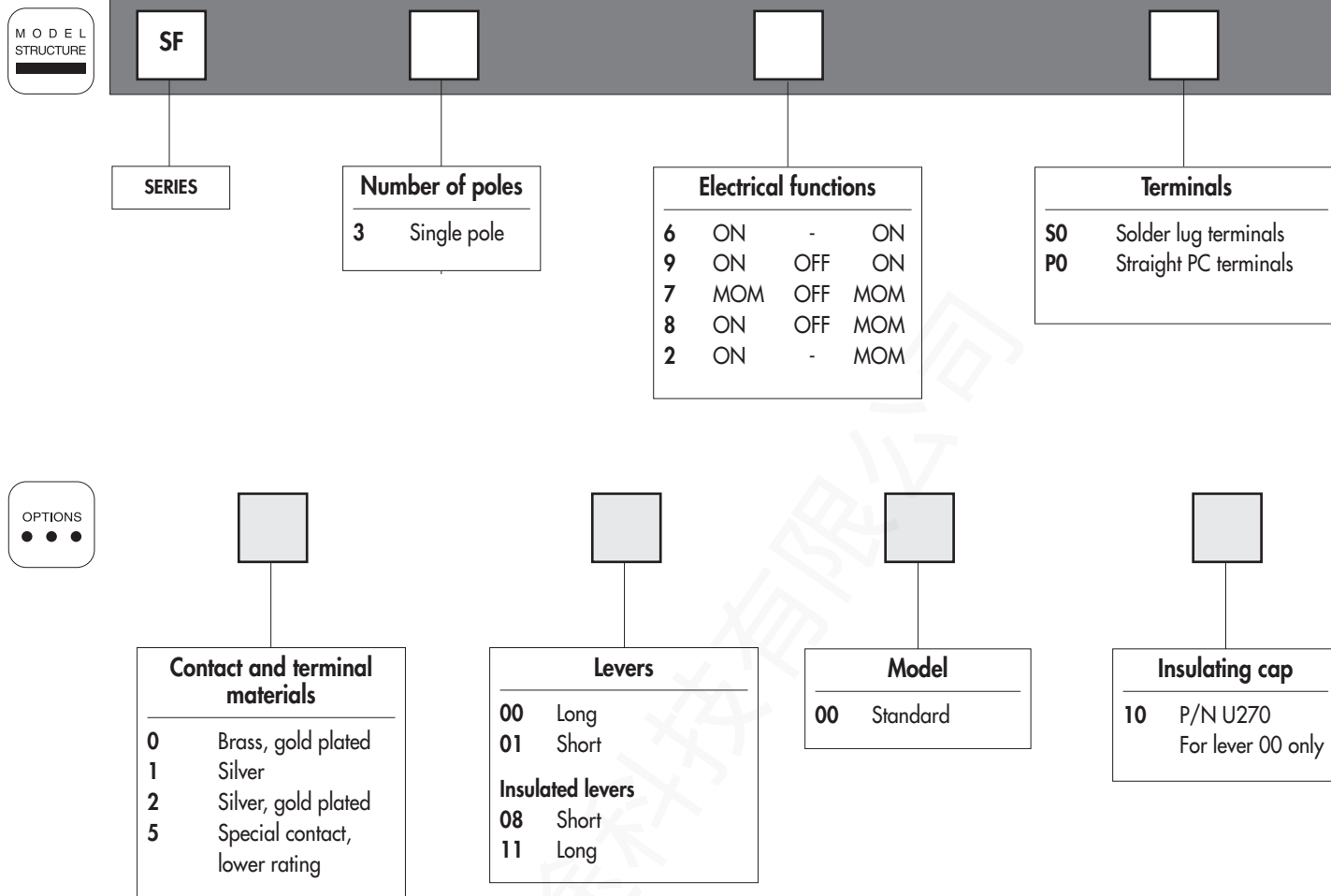
U1710

For lever 7

Cap colours

Replace "0" by
number

1	blue
1/4	dark blue
2	black
3	green
4	grey
5	yellow
6	red
7/1	white
9	orange



ABOUT THIS SERIES

On the following pages, you will find successively :

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

Specifications are at the beginning of the S series.

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



Mounting accessories : 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 to 25 pieces depending on model.

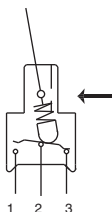
SF series

Washable toggle switches - insulated threaded bushing

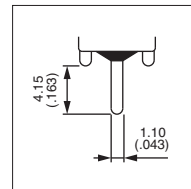
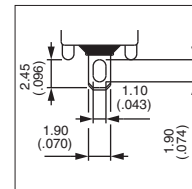
Solder lug or straight PC terminals

MODEL
STRUCTURE

→ Keyway



- Single pole configurations
- Max. torque : 0,25 Nm (.184 Ft.lb)
- Iron soldering : 300°C max. 5 sec. max.
- Max. panel thickness :
2,5 mm (.098) with 2 nuts
4 mm (.157) with 1 nut



MODEL
STRUCTURE



Shown with standard lever 00

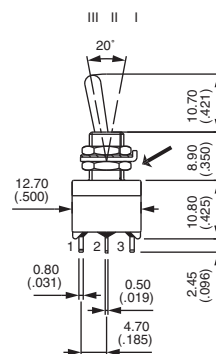
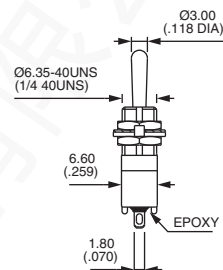
Solder lugs : SF..S0

→ Keyway



SF36S0
SF39S0
SF37S0
SF38S0
SF32S0

III	II	I
2-3		1-2
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM



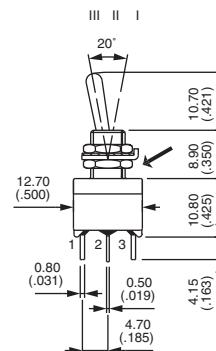
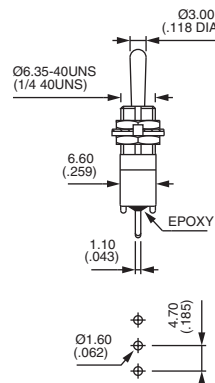
Straight PC terminals : SF..P0

→ Keyway

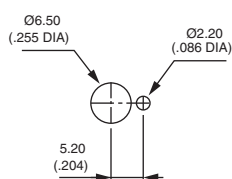


SF36P0
SF39P0
SF37P0
SF38P0
SF32P0

III	II	I
2-3		1-2
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM

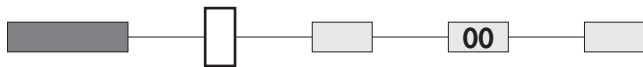


PANEL CUT-OUT



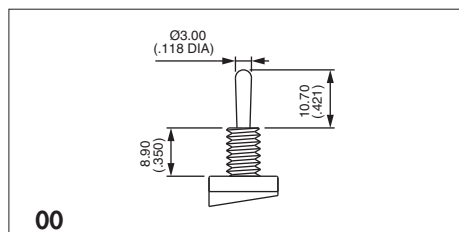


CONTACT AND TERMINAL MATERIALS



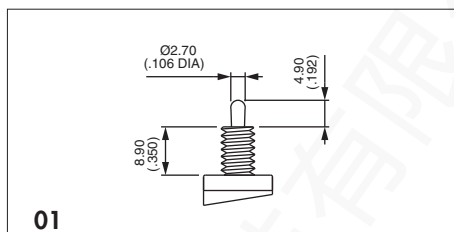
- 0** Brass, gold plated (standard)
- 1** Silver
- 2** Silver, gold plated
- 5** Special contact, lower rating, minimum quantity : consult factory.

LEVERS



00

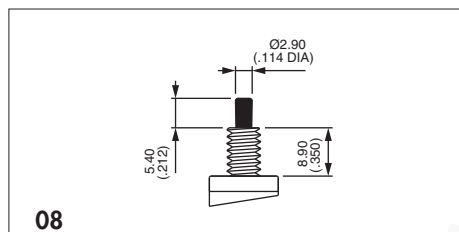
Standard



01

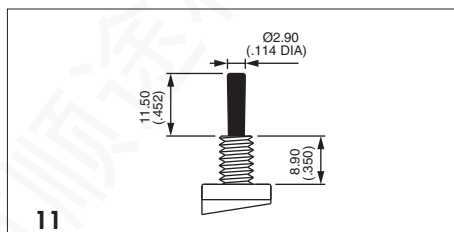
Insulated levers

Protected against electrostatic discharges (ESD) up to 12KV. Black colour.



08

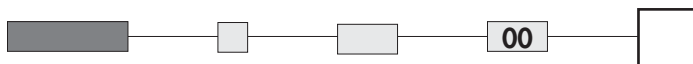
Short



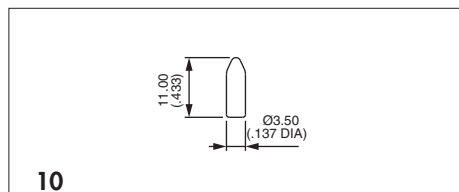
11

Long

INSULATING CAP



Blank Without cap



10

P/N U270 - For lever 00

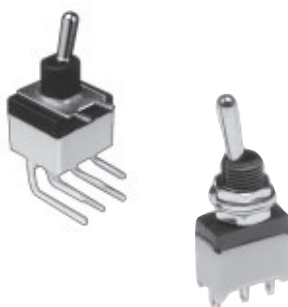
To order cap separately, use its part number (U270).

Cap colours

Replace "0" by number

- 1** blue
- 1/4** dark blue
- 2** black
- 3** green
- 4** grey
- 5** yellow
- 6** red
- 7/1** white
- 9** orange

UG1006-A



☐ Sealed

- Secure assembly of the two case parts
- Internally sealed bushing
- Epoxy sealed terminals

☐ Process compatible (S series)

- Wave solderable
- Washable

☐ Optional ESD protection

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
 - silver contacts (A or 1) : 2A 250VAC - 5A 125VAC - 4A 30VDC
 - gold plated brass contacts (CD or 0) : 0,4VA 20VAC or DC
 - gold plated silver contacts (AD or 2) : 2A 250VAC - 5A 125VAC - 4A 30VDC (300mA 30VDC for gold plating)
- Initial contact resistance : 10 mΩ max.
- Insulation resistance : 1.000 MΩ min.
- Dielectric strength : 1.000 Vrms 50 Hz min.
- Electrical life at full load :

Contacts	Number of cycles	
	2 positions	3 positions
A or 1	40.000	40.000
CD or 0	100.000	50.000
AD or 2	40.000	40.000

MATERIALS

- Case and cover : UL94-VO, polyamide, glass filled or PES
- Actuator : brass, nickel plated
- Contacts
 - CD or 0** : brass, gold plated
 - A or 1** : silver
 - AD or 2** : silver, gold plated
- Terminal seal : epoxy

GENERAL SPECIFICATIONS

- Mechanical strength :
 - Terminals are strengthened by a bracket or a ground plate ensuring the rigidity of the switch on the board.
 - Actuator strength is 10N max.
- Operating temperature : -20°C to +85°C
- Storage temperature : -40°C to +85°C
- Moisture :
 - The insulating materials employed and the complete seal permit the switches to withstand a 56 days moisture test (IEC 68-2-3).
- Soldering - thermal shock (S series only) :
 - The switches are especially designed for flow soldering at 260°C during 5 seconds owing to high temperature polymer parts.
- Iron soldering (SF series) : 300°C 5 sec. max.
- Solderability : The switches are tested at 235°C according to IEC 68-2-20 after accelerated aging.

AGENCY APPROVALS



CECC 96201-006

Availability : consult factory for details of approved models.

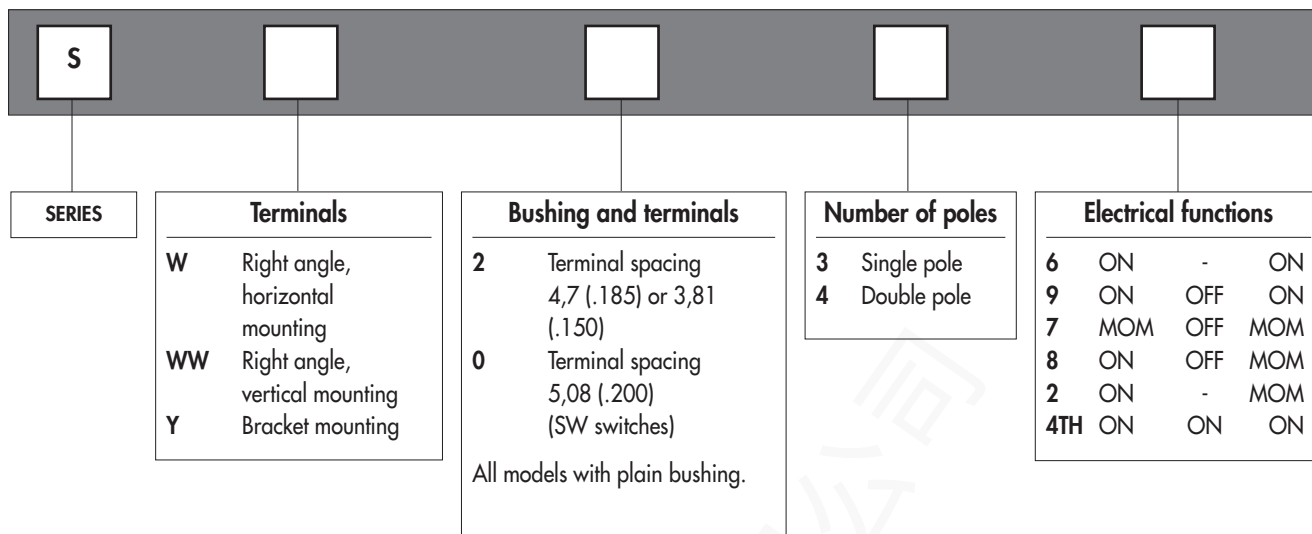
Marking : to order switches marked UL or CECC, complete appropriate box of ordering format.

S series

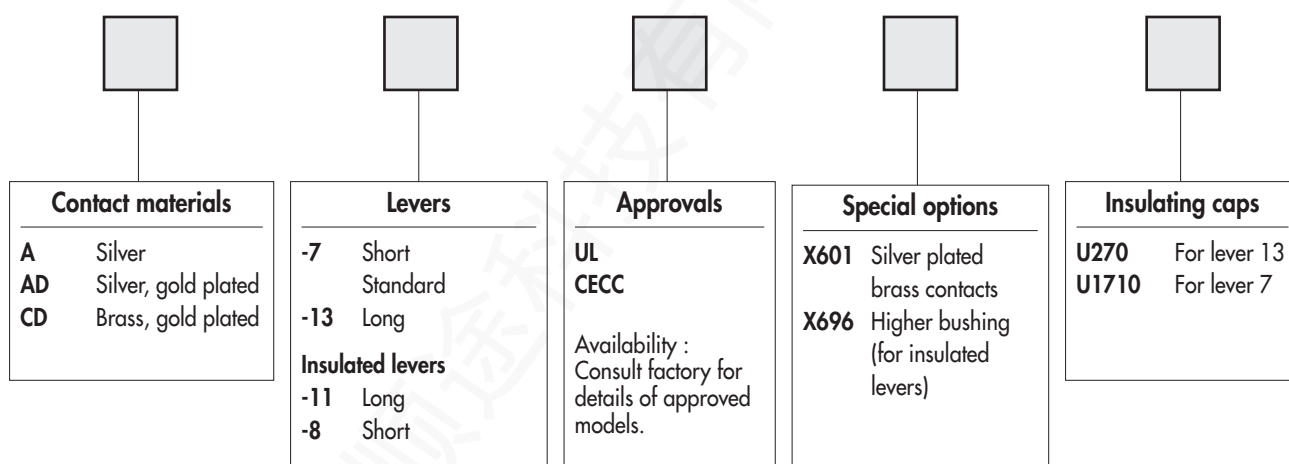
Washable toggle switches - plain bushing

Overview

MODEL STRUCTURE



OPTIONS



ABOUT THIS SERIES

On the following pages, you will find successively :

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

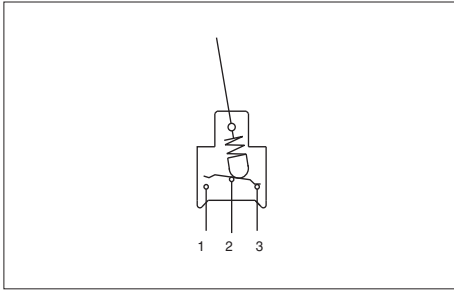
Dimensions : first dimensions are in mm while inches are shown as bracketted numbers.



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



Packaging unit : 50 or 25 pieces depending on model.



- Straight PC or right angle terminals
- Terminal spacing 4,7 (.185) or 5,08 (.200) on SW switches
- 1 and 2 pole configurations

MODEL STRUCTURE



Shown with lever (-7)

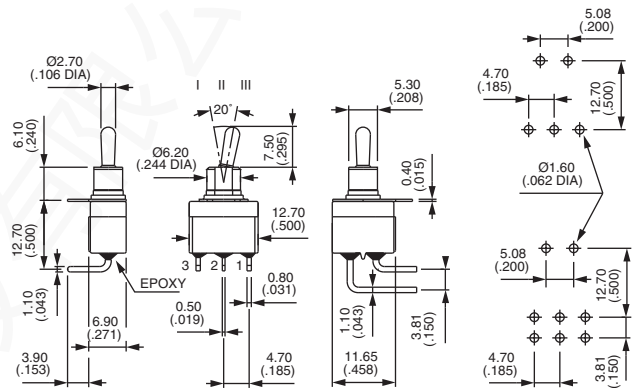
Right angle terminals - horizontal - spacing 4,7 (.185)



Single pole Double pole

SW236	SW246
SW239	SW249
SW237	SW247
SW238	SW248
SW232	SW242
	SW244TH*

III	II	I
2-3		2-1
5-6		4-5
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM
ON	ON	ON



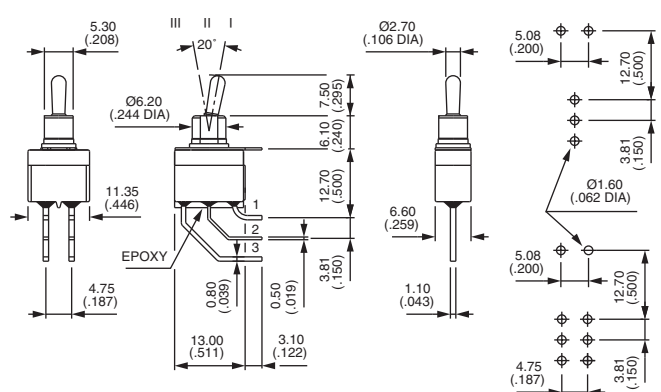
Right angle terminals - vertical



Single pole Double pole

SWW236	SWW246
SWW239	SWW249
SWW237	SWW247
SWW238	SWW248**
SWW232	SWW242**
	SWW244TH*

I	II	III
2-3		2-1
5-6		4-5
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM
ON	ON	ON



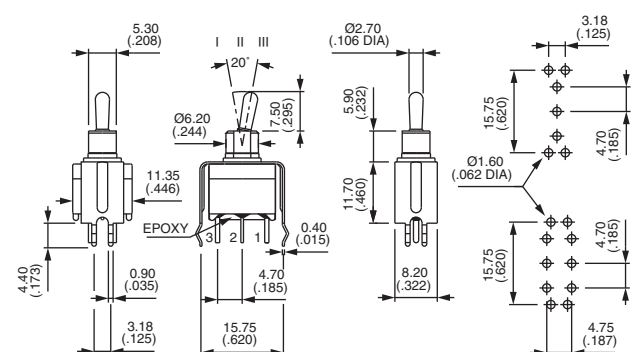
Bracket mounting



Single pole Double pole

SY236	SY246
SY239	SY249
SY237	SY247
SY238	SY248
SY232	SY242
	SY244TH*

III	II	I
2-3		2-1
5-6		4-5
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM
ON	ON	ON



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

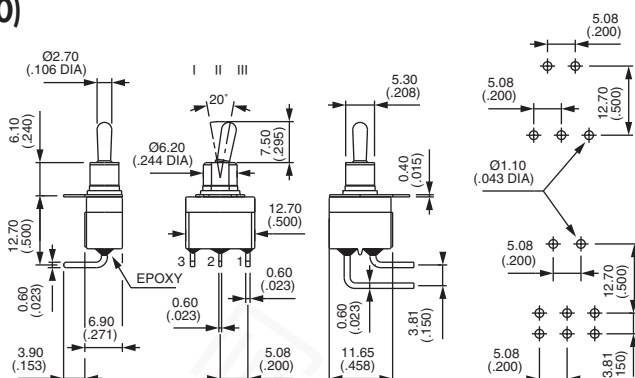
** Functions 2 and 8 : reversed connection available. Consult factory.

Right angle terminals - horizontal - spacing 5,08 (.200)



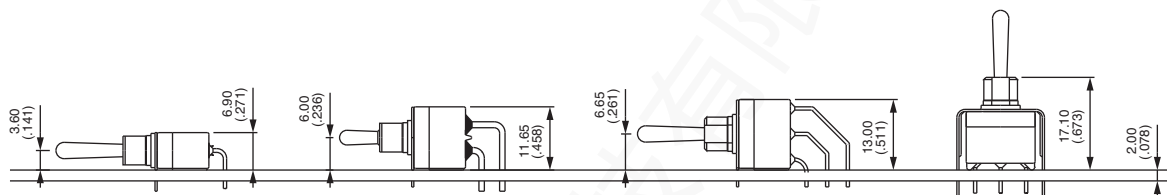
Single pole Double pole

SW036	SW046	ON	-	ON
SW039	SW049	ON	OFF	ON
SW037	SW047	MOM	OFF	MOM
SW038	SW048	ON	OFF	MOM
SW032	SW042	ON	-	MOM
	SW044TH*	ON	ON	ON



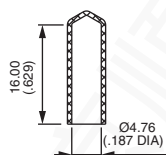
* Function 4 : SP in DP case, see end of catalogue.

PCB MOUNTING



CAP FOR PCB PROCESSING

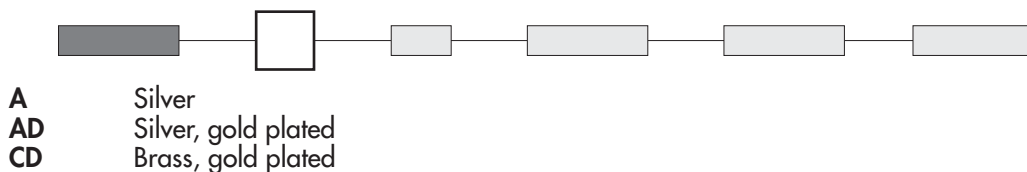
Provide additional protection during PCB processing.
Supplied mounted on the switch or separately.
Material : vinyl



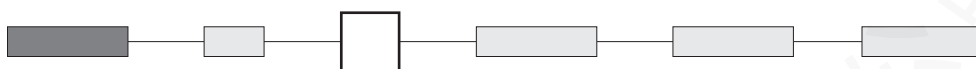
U3012



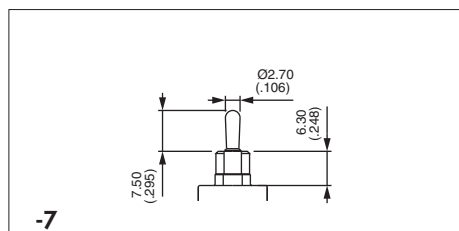
CONTACT MATERIALS



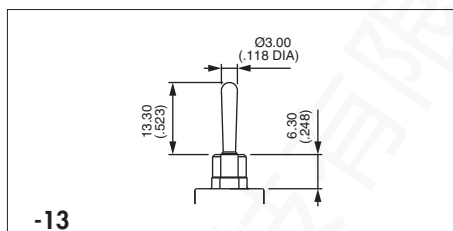
LEVERS



Dash compulsory before lever code.



Standard



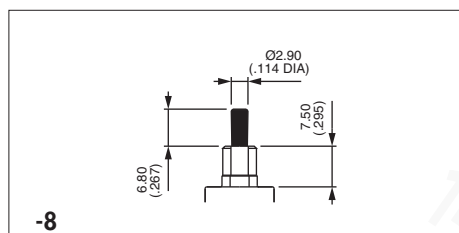
Long



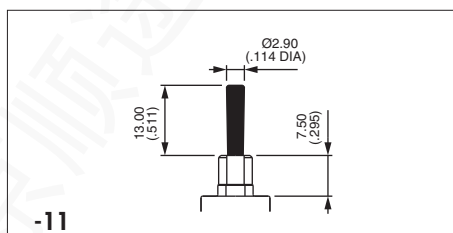
If actuator not specified, we supply former default option -13.

Insulated levers

Protected against electrostatic discharges (ESD) up to 12 KV. Black colour.



Short



Long



To combine with option X696.

SPECIAL OPTIONS



X601 Silver plated brass contacts
 Lower rating - Minimum quantity : 5.000 pieces per model and shipment.

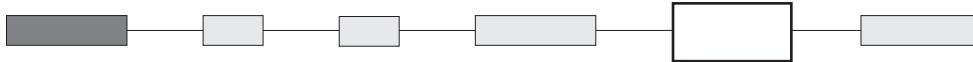
X696 Higher bushing 7,50 (.295). Compulsory for insulated levers 11 and 8.

S series

Washable toggle switches - plain bushing

OPTIONS
● ● ●

AGENCY APPROVALS

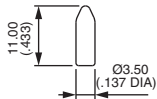
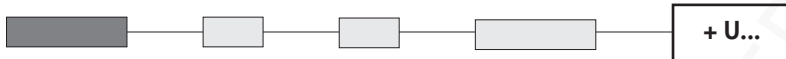


UL
CECC

Availability : consult factory for details of approved models.

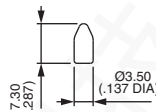
Marking : to order switches marked UL or CECC, please complete above box with desired approvals.
Blank : no agency approval required.

INSULATING CAPS



U270

For lever 13



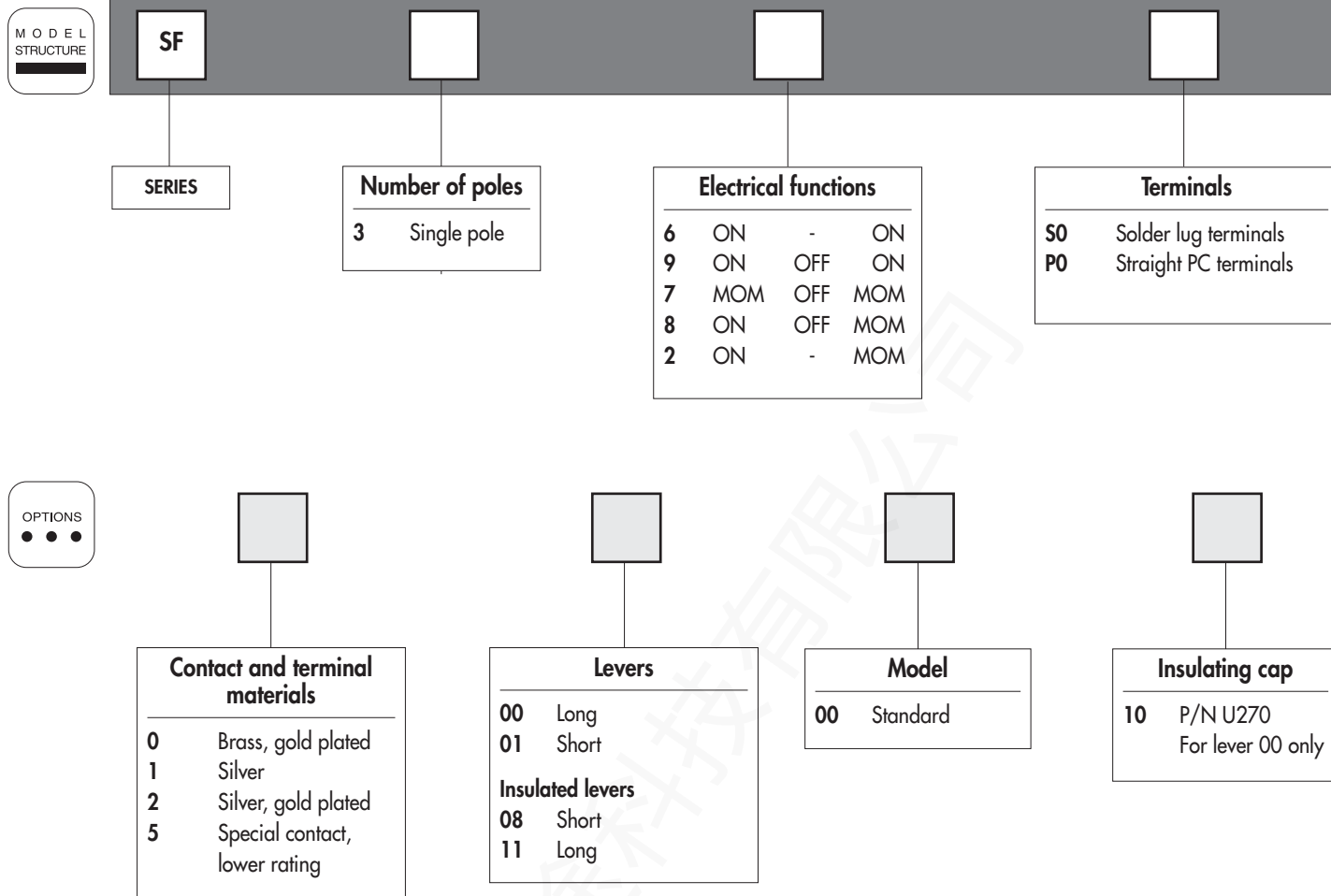
U1710

For lever 7

Cap colours

Replace "0" by
number

1	blue
1/4	dark blue
2	black
3	green
4	grey
5	yellow
6	red
7/1	white
9	orange



ABOUT THIS SERIES

On the following pages, you will find successively :

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

Specifications are at the beginning of the S series.

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



Mounting accessories : 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 to 25 pieces depending on model.

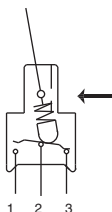
SF series

Washable toggle switches - insulated threaded bushing

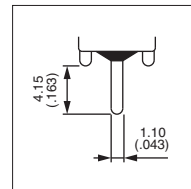
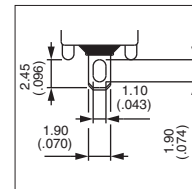
Solder lug or straight PC terminals

MODEL
STRUCTURE

→ Keyway



- Single pole configurations
- Max. torque : 0,25 Nm (.184 Ft.lb)
- Iron soldering : 300°C max. 5 sec. max.
- Max. panel thickness :
2,5 mm (.098) with 2 nuts
4 mm (.157) with 1 nut



MODEL
STRUCTURE



Shown with standard lever 00

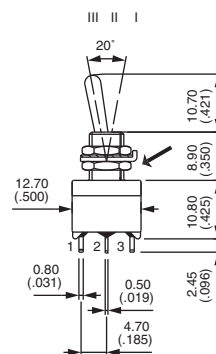
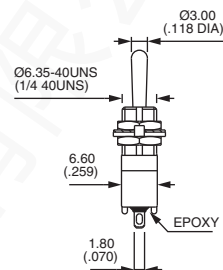
Solder lugs : SF..S0

→ Keyway



SF36S0
SF39S0
SF37S0
SF38S0
SF32S0

III	II	I
2-3		1-2
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM



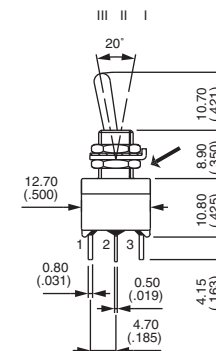
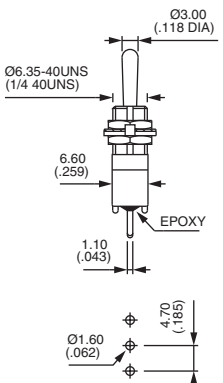
Straight PC terminals : SF..P0

→ Keyway

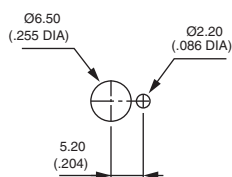


SF36P0
SF39P0
SF37P0
SF38P0
SF32P0

III	II	I
2-3		1-2
ON	-	ON
ON	OFF	ON
MOM	OFF	MOM
ON	OFF	MOM
ON	-	MOM

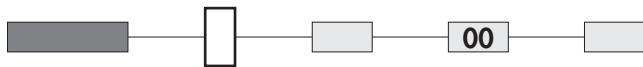


PANEL CUT-OUT



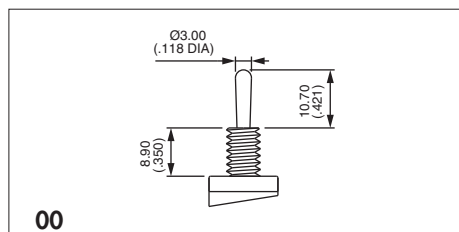


CONTACT AND TERMINAL MATERIALS



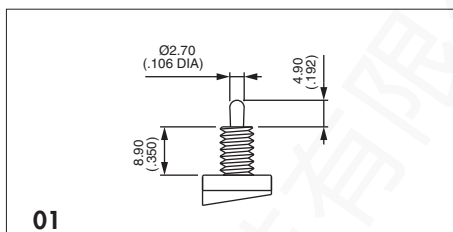
- 0** Brass, gold plated (standard)
- 1** Silver
- 2** Silver, gold plated
- 5** Special contact, lower rating, minimum quantity : consult factory.

LEVERS



00

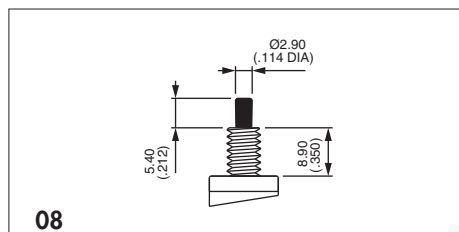
Standard



01

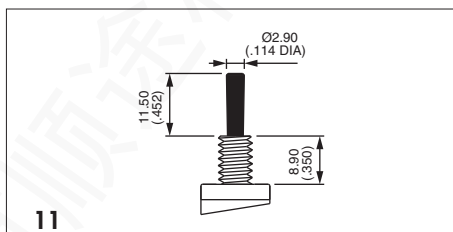
Insulated levers

Protected against electrostatic discharges (ESD) up to 12KV. Black colour.



08

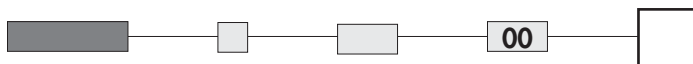
Short



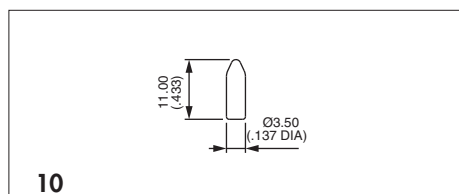
11

Long

INSULATING CAP



Blank Without cap



10

P/N U270 - For lever 00

To order cap separately, use its part number (U270).

Cap colours

Replace "0" by number

- 1** blue
- 1/4** dark blue
- 2** black
- 3** green
- 4** grey
- 5** yellow
- 6** red
- 7/1** white
- 9** orange



□ Ø 4,83 mm threaded bushing

□ Solder lug and straight PC terminals

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
 - gold plated contacts : 0,4VA 20V max. AC or DC
 - silver plated contacts : 0,5A 48V max. AC or DC
- Minimum load : 10mA 50mV - 10µA 5VDC
- Contact resistance : 20 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength: 1.000 Vrms 50 Hz min. between terminals and frame
500 Vrms 50 Hz min. between terminals
- Electrical life at full load :

Contacts	Number of cycles	
	2 positions	3 positions
Gold plated	60.000	30.000
Silver plated	20.000	10.000

GENERAL SPECIFICATIONS

- Strength of terminals : pull-out force 10N max.
- Torque : 1 Nm max. applied between the 2 nuts
- Max. panel thickness : 1,5 mm (.059) with 2 nuts
- Operating temperature : -30°C to +85°C
- Moisture : 21 days 95 % (NFC 20-603 - IEC 8-2-3)

MATERIALS

- Case : thermoplastic UL94-V0
- Actuator : brass, nickel plated
- Bushing : zamac, tin plated
- Contacts and terminals :
 - 0 : brass, gold plated (standard)
 - 1 : brass, silver plated
 - 3 : brass, gold plated (1,27 micron gold)
- Terminal seal : epoxy

SOLDERING

- Hand soldering : 280°C max. for 5 seconds max.
- Wave soldering : 260°C max. for 5 seconds max.

ZL					
SERIES	Number of poles	Electrical functions	Terminals	Contact and terminal materials	Bushings
3	Single pole	1 ON - OFF 6 ON - ON 9 ON OFF ON 7 MOM OFF MOM 8 ON OFF MOM 2 ON - MOM	SO Solder lug PO Straight PC	0 Brass, gold plated 1 Brass, silver plated 3 Brass, gold plated (1,27 micron gold)	01 Threaded, with flat 02 Threaded, with keyway

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



Packaging unit : 100 pieces

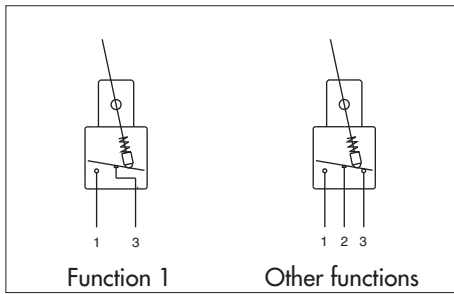


Mounting accessories : Standard hardware supplied with all models : 2 hex nuts 7 mm (.275) across flats P/N U5731, 1 locking ring P/N U5821 (with keyway) or U5831 (with flat) and 1 lockwasher P/N U5841.

ZL series

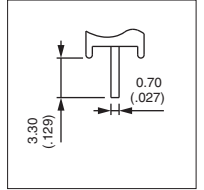
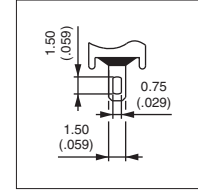
Tiny toggle switches - metal bushing

A



- Single pole
- Gold plated or silver plated contacts
- Epoxy sealed terminals

Other actuator lengths available on request.



MODEL
STRUCTURE



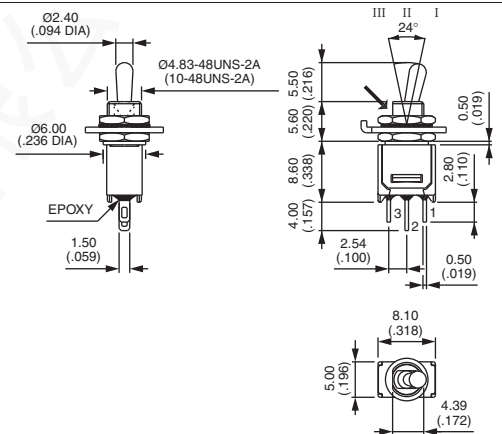
Shown with threaded bushing code 01

Solder lug terminals : ZL..S0



ZL31S0
ZL36S0
ZL39S0
ZL37S0
ZL38S0
ZL32S0

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



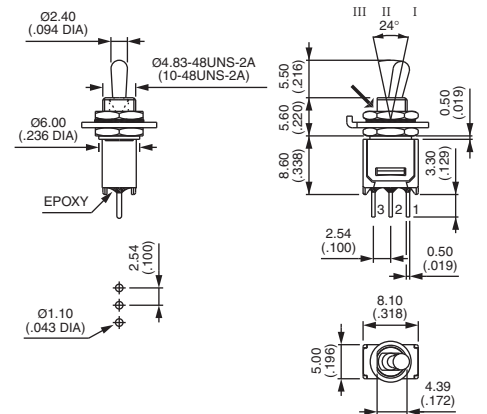
→ Flat

Straight PC terminals : ZL..P0



ZL31P0
ZL36P0
ZL39P0
ZL37P0
ZL38P0
ZL32P0

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



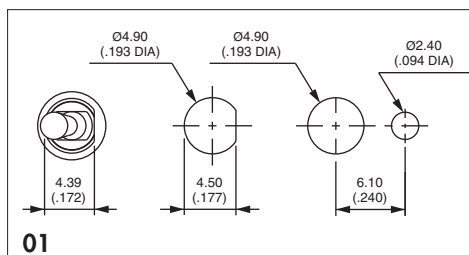
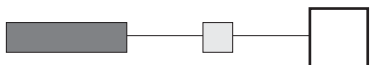
→ Flat

CONTACT & TERMINAL MATERIALS



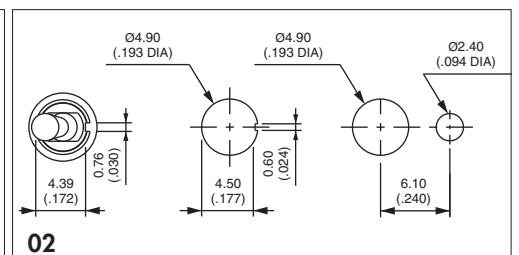
0 : Brass, gold plated (standard) - 1 : Brass, silver plated - 3 : Brass, gold plated (1,27μ gold)

BUSHINGS



01

Threaded, with flat



02

Threaded, with keyway