Professional toggle switches

Distinctive features

❑ Applications

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

❑ Approvals

CECC 96201-005
CECC 96201-008

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

❑ Robust switches for high specification environments

❑ Toggle action on 2-position models giving smooth mechanical operation

❑ Plastic material with high insulation resistance

❑ Several front panel sealing options

❑ Several locking lever options (12000 series)

❑ Bright chrome, satin chrome or black finish

11000 series

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

Specifications

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
  - silver contacts (A-AD2-X780) : 2A 250VAC - 4A 125VAC - 4A 30VDC
  - gold contacts (D) : 200mA 250VAC - 400mA 125VAC

  Peak currents, refer to "Special options".
- 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 :

		Number of cycles	
Contacts	Max. current/voltage rating	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.).

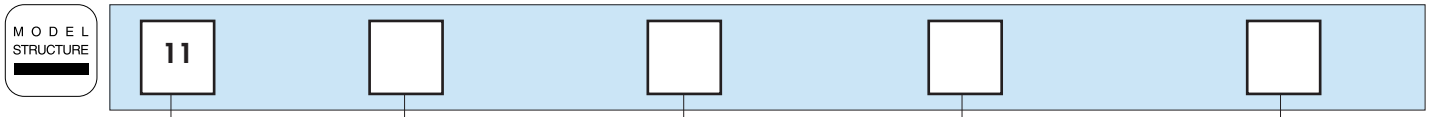
AGENCY APPROVALS

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.



SERIES

Terminals and bushings

1	Solder lug or right angle
2	Straight PC terminals

All models with Ø 6,35 (1/4) threaded bushing.

Number of poles

3	Single pole
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

Terminals

Blank	Solder lug or straight PC
W	Right angle, horizontal mounting (function 6, SP only)

Finish

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

Levers

Blank	Standard
-26	Cylindrical

Approval

CECC

Availability : Consult factory for details of approved models.

Contact materials

A	Silver
AD2	Gold plated silver (2 microns)
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.

Special options

Blank	No special requirement
X408	Front panel sealing by two O-rings

Other : see following pages.

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

ABOUT THIS SERIES

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

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

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

11000 series

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

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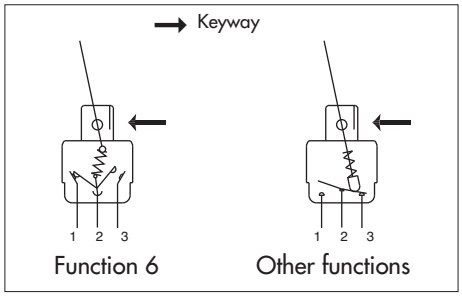
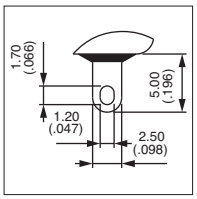


- Solder lug, straight PC or right angle terminals
- Epoxy sealed terminals standard

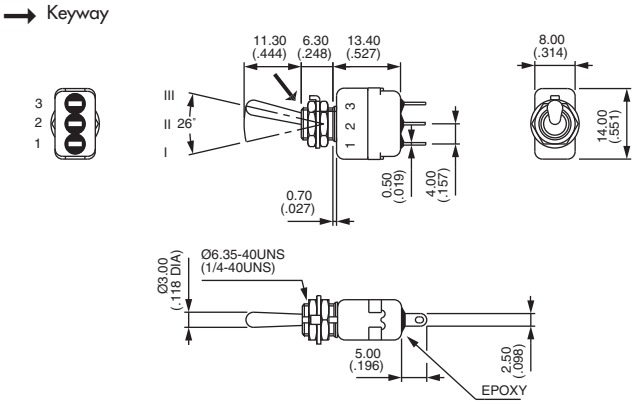


MODEL STRUCTURE

Shown with standard lever

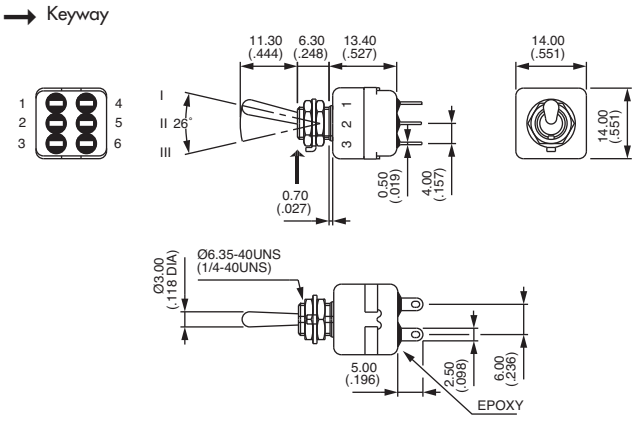
Solder lug terminals - single pole

	I	II	III
11136	ON	-	ON
11139	ON	OFF	ON
11137	MOM	OFF	MOM
11138	ON	OFF	MOM



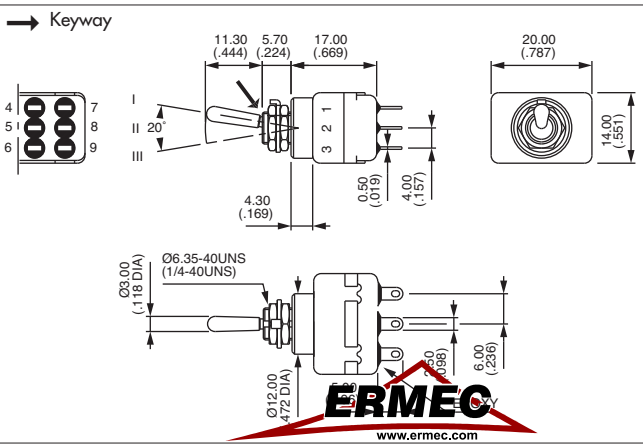
Solder lug terminals - double pole

	I	II	III
11146	ON	-	ON
11149	ON	OFF	ON
11147	MOM	OFF	MOM
11148	ON	OFF	MOM



Solder lug terminals - three pole

	I	II	III
11156	ON	-	ON
11159	ON	OFF	ON
11157	MOM	OFF	MOM
11158	ON	OFF	MOM

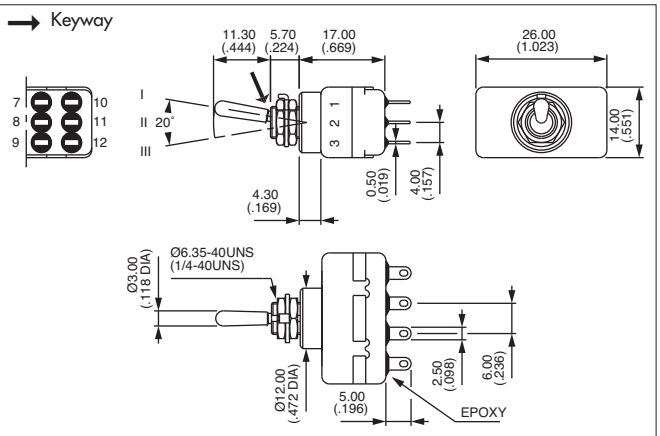


11000 series

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

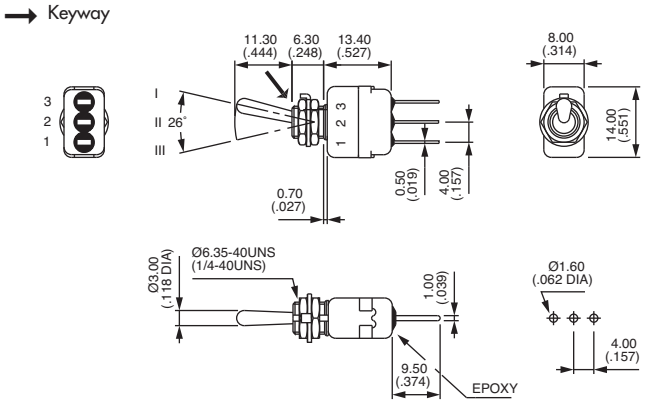
Solder lug terminals - four pole

	I	II	III
11166	ON	-	ON
11169	ON	OFF	ON
11167	MOM	OFF	MOM
11168	ON	OFF	MOM



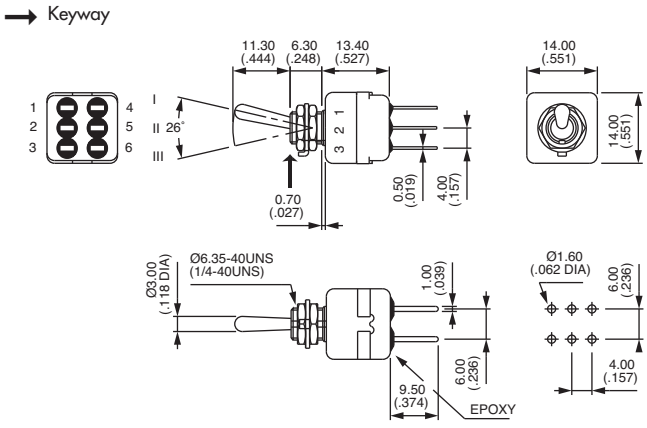
Straight PC terminals - single pole ▲

	I	II	III
11236	ON	-	ON



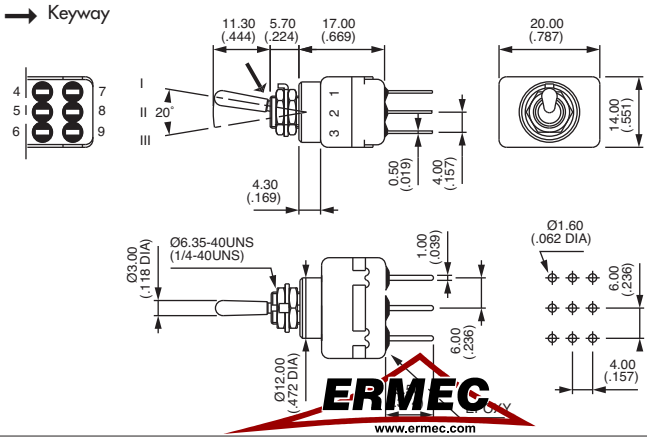
Straight PC terminals - double pole ▲

	I	II	III
11246	ON	-	ON



Straight PC terminals - three pole ▲

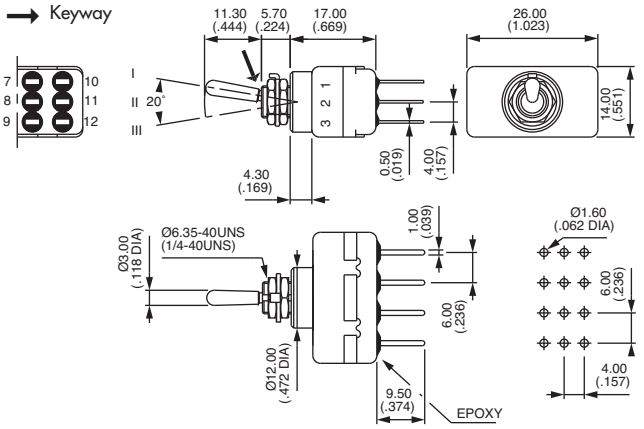
	I	II	III
11256	ON	-	ON



A

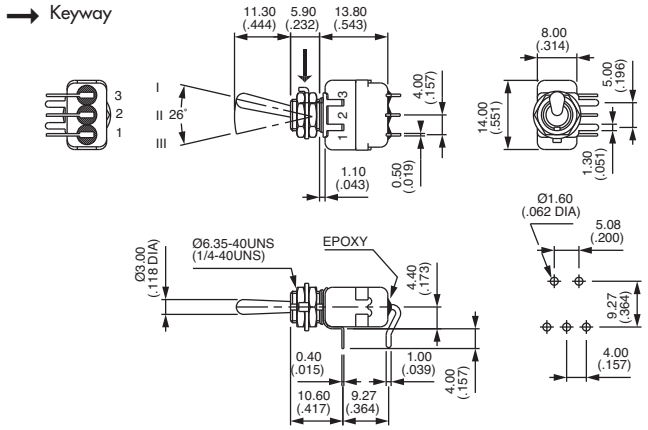
Straight PC terminals - four pole ▲

	I	II	III
11266	ON	-	ON

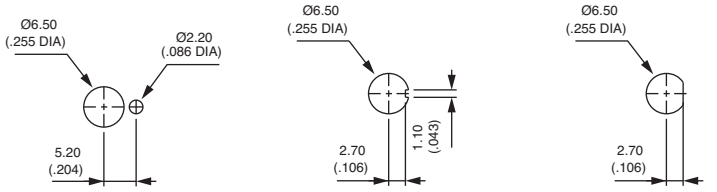


Right angle terminals - horizontal - single pole

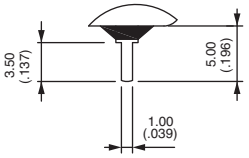
	I	II	III
11136W	ON	-	ON



PANEL CUT-OUT



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



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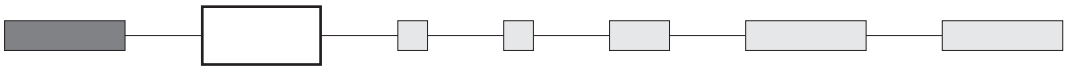
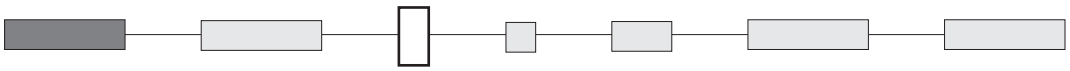
CONTACT MATERIALS



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

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

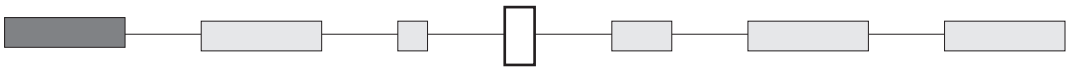
FINISH



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

Other finish, consult factory.

SEALING

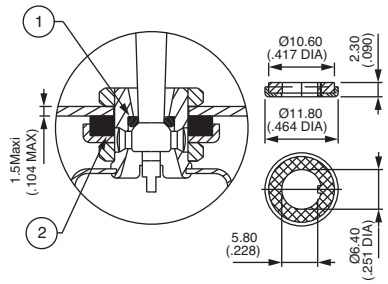


Epoxy sealed terminals are standard.

Blank No sealing except standard

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

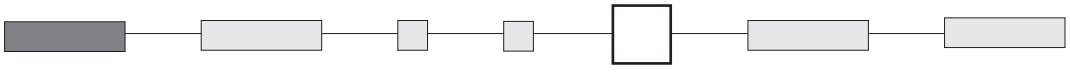
⚠ Not available on 11000W model.

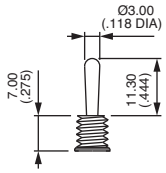


① O-ring ② Sealing washer

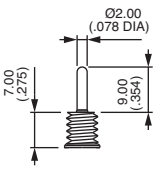
Sealing by two O-rings, see X408 under "Special options".
Sealing boots : see section H.

LEVERS





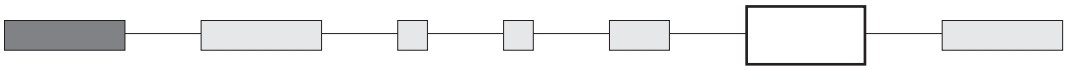
Blank
Standard



-26
Cylindrical

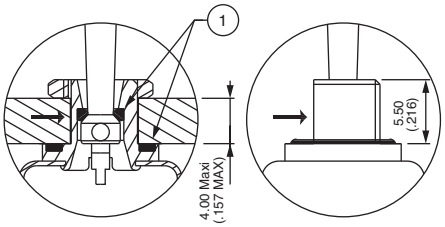
A

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

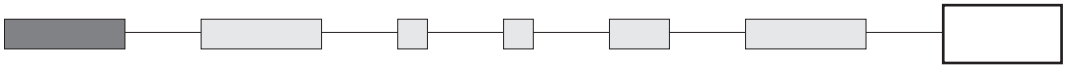
X780 Solid rivet, gold plated silver/nickel alloy

X910 **Switches for peak currents**

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

Single pole **11136 X910**	ON	-	ON	• Contacts : solid rivet - silver/nickel alloy (AgNi) • Max. current/voltage rating : 3/80A (1 ms) 60VDC - 10.000 cycles
Double pole **11146 X910**	ON	-	ON	• 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.

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

Specifications

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
  - silver contacts (A-AD2-X780) : 4A 30VDC
  - gold contacts (D) : 100mA 30VDC

  Peak currents, refer to "Special options".
- 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 :

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

MATERIALS

- Case : diallylphthalate (DAP)
- Actuator : brass, chrome plated
- Bushing : brass, nickel plated
- Housing : brass, nickel plated
- Contacts
  A : silver
  AD2 : gold plated silver (2 microns gold)
  X780 : solid rivet - gold plated silver/nickel alloy
  D : solid gold rivet
  X910 : silver/nickel alloy (for peak currents, see "Special options")
- Terminal seal : epoxy

Note : AD2 and X780 contacts can be used for high level applications. In this case, the gold layer is considered only as a protection against oxidation during storage.
Tin dipped terminals available, see "Special options".

GENERAL SPECIFICATIONS

- Torque :1,50 Nm (1.10 Ft.lb) max. applied between the 2 nuts
- Standard panel thickness : 4,5 mm (.177) max.
- Operating temperature : -40°C to +85°C

RELIABILITY - RUN-IN TEST

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

AGENCY APPROVALS

CECC 96201-005
CECC 96201-008

Designed to **MIL** specifications

Availability : consult factory for details of approved models.
Marking : to order switches marked CECC, complete appropriate box of ordering format.

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

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

12000 series

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

Overview

MODEL STRUCTURE

12 | ☐ | ☐ | ☐ | ☐

SERIES

Terminals and bushings

1 Solder lug terminals
2 Straight PC terminals

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

Number of poles

4 Double pole
5 Three pole
6 Four pole

Electrical functions

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

Function 4
. ▲ Must not have blank in "momentary" box.

Momentary for function 4

1R	ON	ON	MOM
2R	MOM	ON	MOM

Leave blank for other functions.

OPTIONS ● ● ●

☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐

Finish

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

Satin chrome finish, see "Special options".

Fluorescent tip

Blank None
038 White fluorescent tip to lever

Available with matt black finish (G) only.

Special options

Blank No special requirement
X408 Front panel sealing by two O-rings
X822 Bushing Ø 15 (.590)

Other : see foll. pages.

Contact materials

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

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

Sealing

Blank Epoxy sealed terminals standard
K Front panel sealing by one O-ring and sealing washer

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

Levers

Blank Standard lever
-12 Short lever

Locking levers

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

Other : see foll. pages.

Approvals

CECC

Availability :
Consult factory for details of approved models.

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

ABOUT THIS SERIES

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

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

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

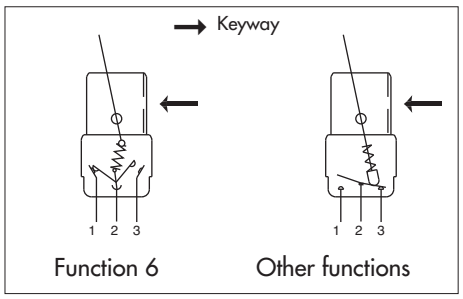
Security caps are available to prevent inadvertent lever operation. They are presented in section I.

MODEL STRUCTURE

12000 series

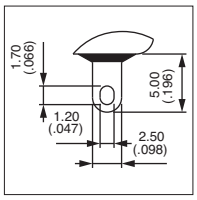
Professional toggle switches - threaded bushing Ø 11,9 (15/32)

Solder lug terminals : 12100



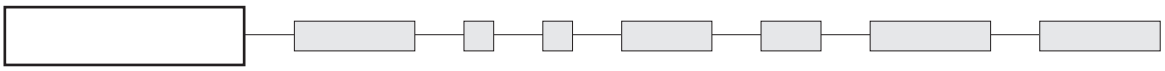
- Epoxy sealed terminals standard

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



A

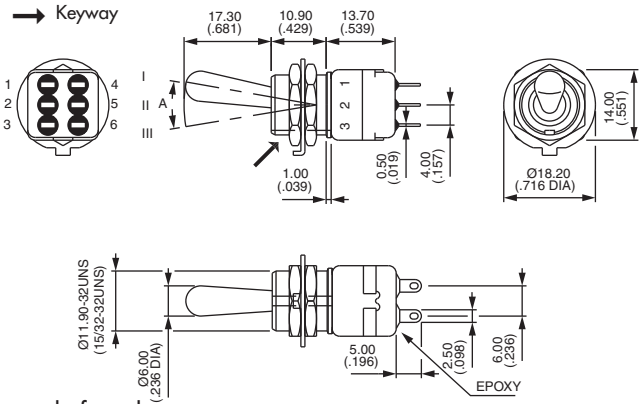
MODEL STRUCTURE



Shown with standard lever

Solder lug terminals - double pole

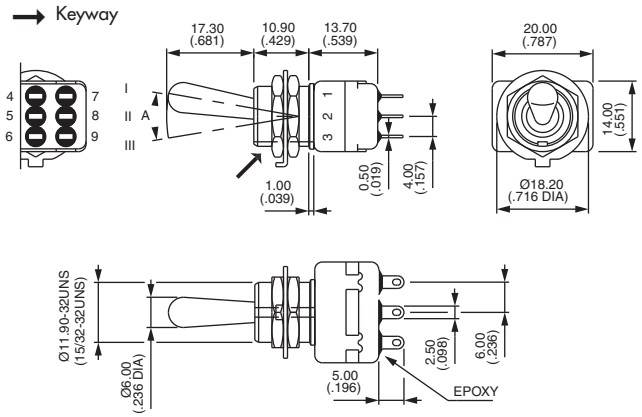
	I	II	III
12146	ON	-	ON
12149	ON	OFF	ON
12147	MOM	OFF	MOM
12148	ON	OFF	MOM
12144*	ON	ON	ON
12144 1R*	ON	ON	MOM
12144 2R*	MOM	ON	MOM
12145	-	ON	MOM



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

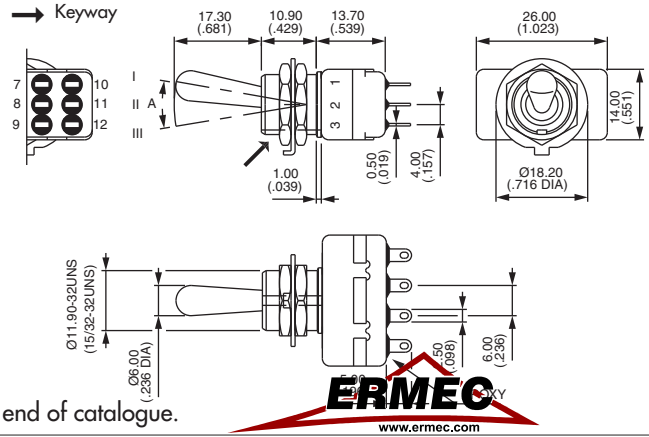
Solder lug terminals - three pole

	I	II	III
12156	ON	-	ON
12159	ON	OFF	ON
12157	MOM	OFF	MOM
12158	ON	OFF	MOM



Solder lug terminals - four pole

	I	II	III
12166	ON	-	ON
12169	ON	OFF	ON
12167	MOM	OFF	MOM
12168	ON	OFF	MOM
12164*	ON	ON	ON
12164 1R*	ON	ON	MOM
12164 2R*	MOM	ON	MOM



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

12000 series

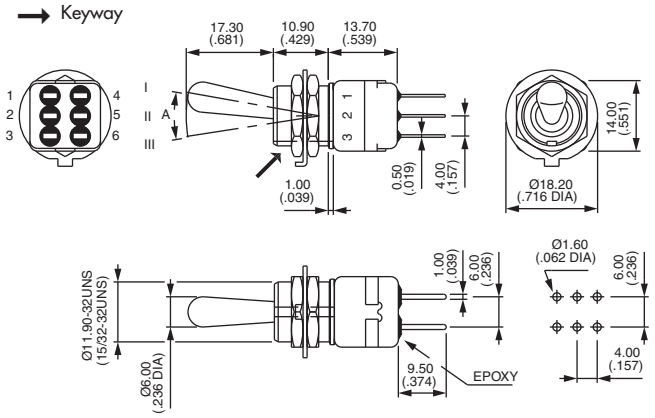
Professional toggle switches - threaded bushing Ø 11,9 (15/32)

Straight PC terminals : 12200

A

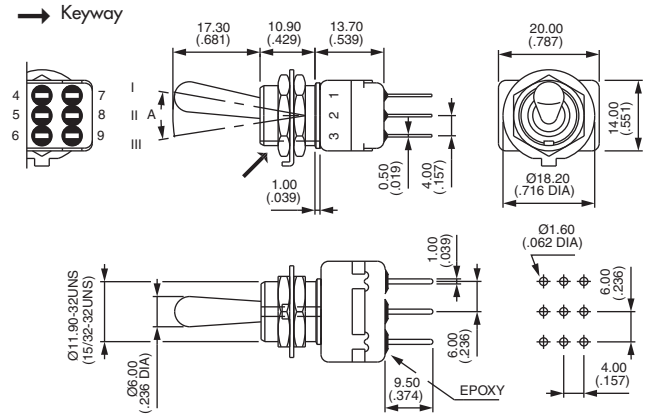
Straight PC terminals - double pole ▲

	I	II	III
12246	ON	-	ON



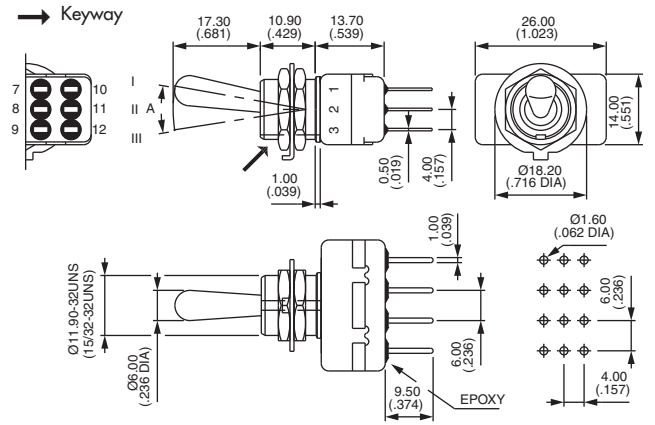
Straight PC terminals - three pole ▲

	I	II	III
12256	ON	-	ON

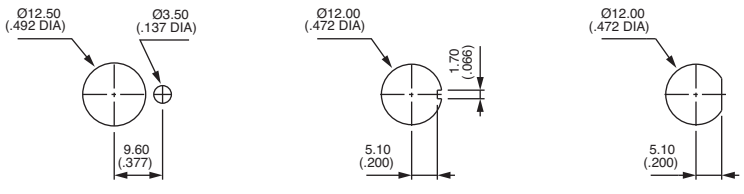


Straight PC terminals - four pole ▲

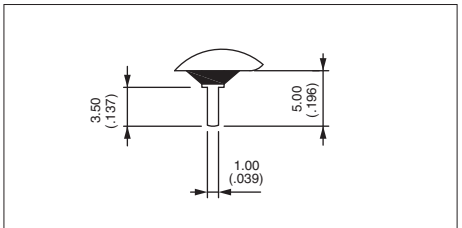
	I	II	III
12266	ON	-	ON



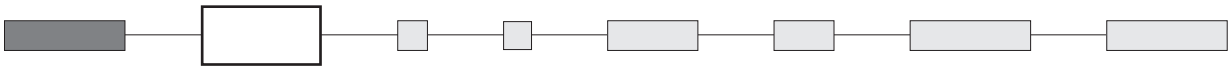
PANEL CUT-OUT



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



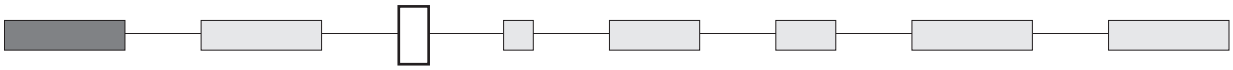
CONTACT MATERIALS



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).

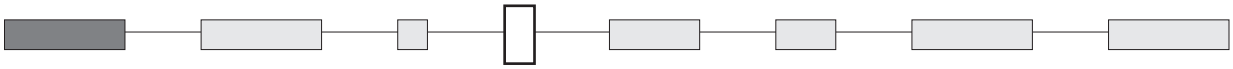
FINISH



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

For satin chrome finish, see "Special options".

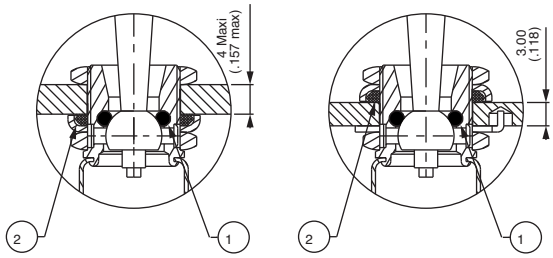
SEALING



Epoxy sealed terminals are standard.

Blank No sealing except standard.

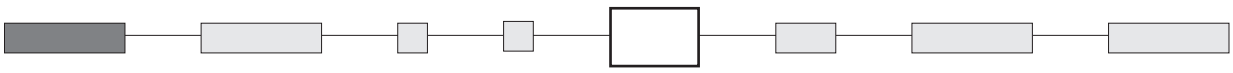
K Front panel sealing by one O-ring and sealing washer.
Protects the switch against water and dust.
Panel seal withstands 1 bar pressure and remains sealed even when switch is operated.



① O-ring ② Sealing washer

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

FLUORESCENT TIP

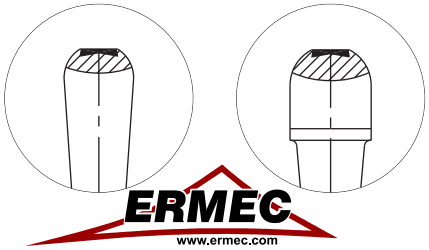


Blank None

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

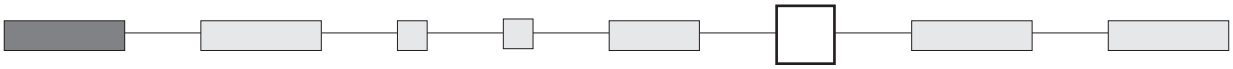
⚠ Available with matt black finish (option G) only.

Standard lever Locking lever



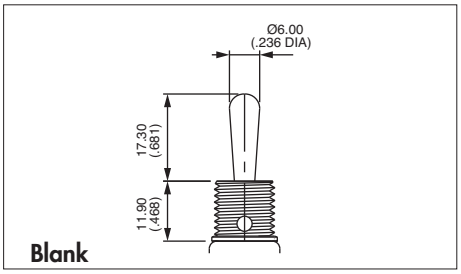
A

ACTUATORS

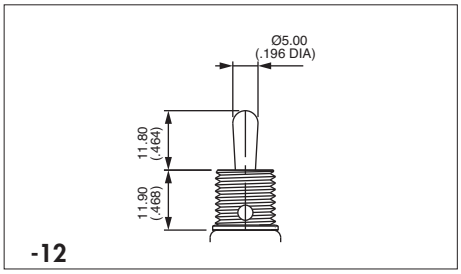


Levers

Dash compulsory before lever code.



Blank
Standard

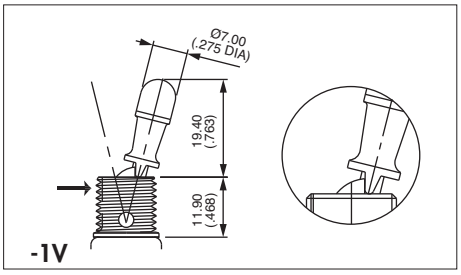


-12
Short lever

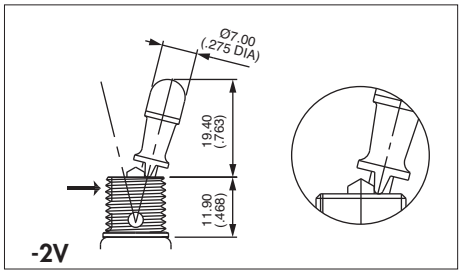
Security caps : see section I.

Locking levers

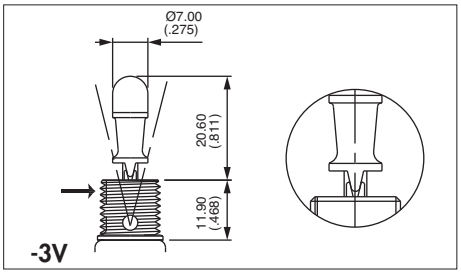
→ Keyway



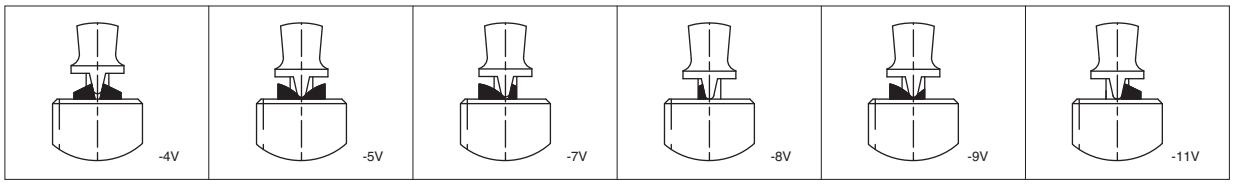
-1V
1 locked position (function 6)
Typical angle of throw : 26°



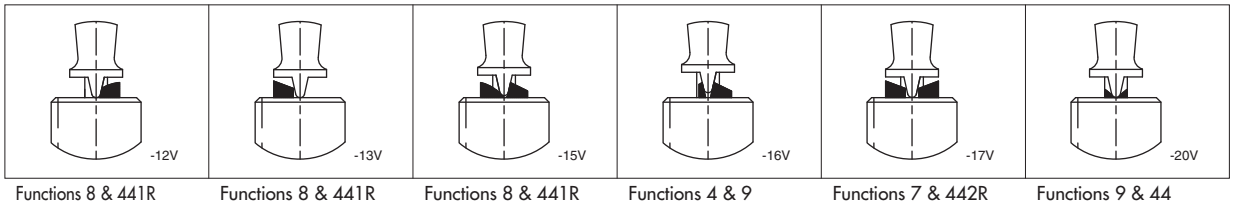
-2V
2 locked positions (function 6)
Typical angle of throw : 26°



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



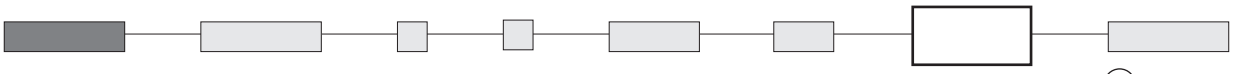
Functions 9 & 4	Functions 7 & 442R	Functions 8 & 441R	Functions 8, 9, 44 & 441R	Functions 8 & 441R	Functons 8, 9, 44 & 441R



Functions 8 & 441R	Functions 8 & 441R	Functions 8 & 441R	Functions 4 & 9	Functions 7 & 442R	Functions 9 & 44

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

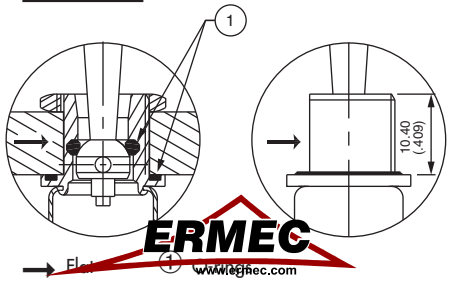
SPECIAL OPTIONS



Blank No special requirement.

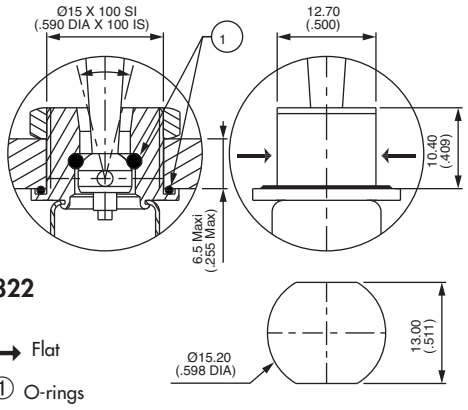
X408 Front panel sealing by two O-rings. Flatted bushing for precise orientation. Panel thickness : 8 mm (.314) max., 3 mm (.118) min. Protects the switch against water and dust. Panel seal withstands 1 bar pressure and remains sealed even when switch is operated.

X545 Lever, bushing, housing, nuts and washers **with satin chrome finish**.



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.

X822

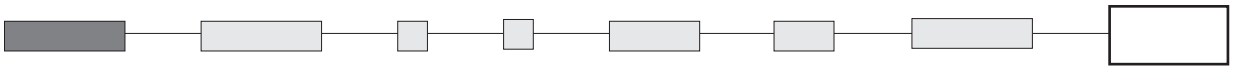
X910 **Switches for peak currents**

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

12146 X910 ON - ON

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

AGENCY APPROVAL



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

Availability : consult factory for details of approved models.

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

12000X778 series

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

Distinctive features

❑ Approvals

CECC 96201-005
CECC 96201-008

MIL Standards MIL STD 3950 and MIL STD 83731

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 (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

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

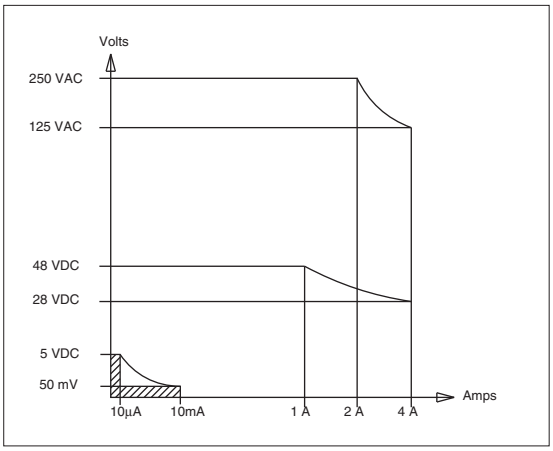
A comprehensive range of protection boots (both full and half length), locking levers and security caps are available.

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

Specifications

ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load : 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 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)

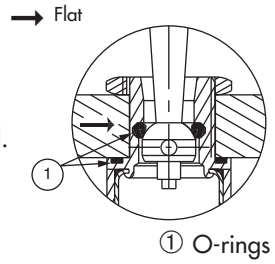


MATERIALS

- 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



① O-rings

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

ermec@ermec.com

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

Overview

MODEL STRUCTURE

12				
SERIES	Terminals and bushings	Number of poles	Electrical functions	Momentary

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

Other : see following pages.

X778

High performance fully sealed 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 bracketed 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 .

ERMEC www.ermec.com

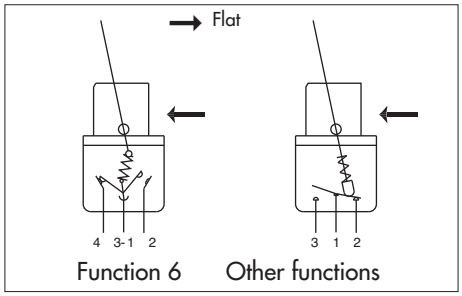
www.ermec.com

MODEL STRUCTURE

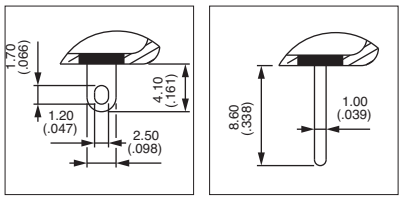
12000X778 series

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

Fully sealed - black

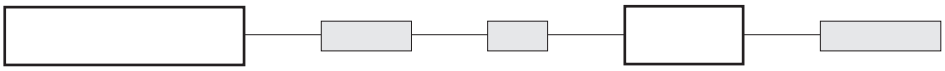


Typical angle of throw (A)	
Function 6	26°
Functions 9, 7, 8, 4	20°
Function 5	12°



A

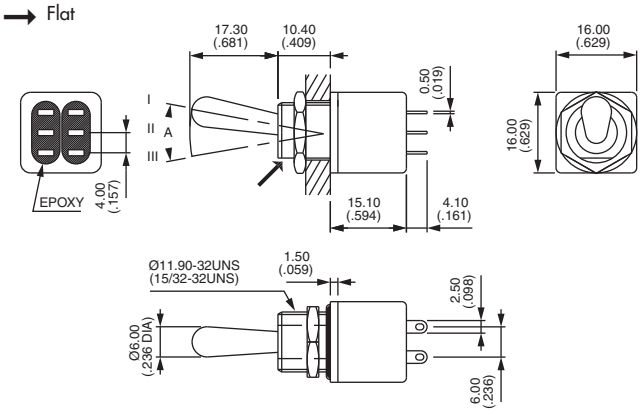
MODEL STRUCTURE



Shown with standard lever

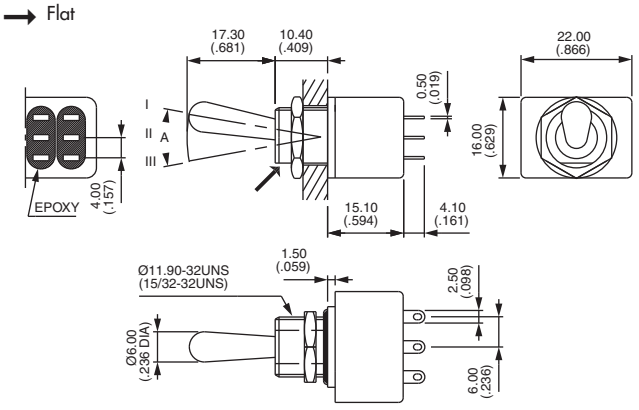
Solder lug terminals - double pole

	I	II	III
12146 X778	ON	-	ON
12149 X778	ON	OFF	ON
12147 X778	MOM	OFF	MOM
12148 X778	ON	OFF	MOM
12144 X778	ON	ON	ON
12144-1R X778	MOM	ON	ON
12144-2R X778	MOM	ON	MOM
12145 X778		ON	MOM



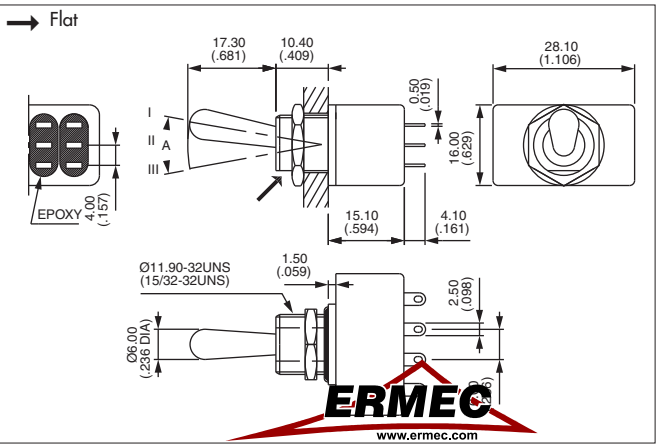
Solder lug terminals - three pole

	I	II	III
12156 X778	ON	-	ON
12159 X778	ON	OFF	ON
12157 X778	MOM	OFF	MOM
12158 X778	ON	OFF	MOM



Solder lug terminals - four pole

	I	II	III
12166 X778	ON	-	ON
12169 X778	ON	OFF	ON
12167 X778	MOM	OFF	MOM
12168 X778	ON	OFF	MOM
12164 X778	ON	ON	ON
12164-1R X778	ON	ON	MOM
12164-2R X778	MOM	ON	MOM



12000X778 series

ermec@ermec.com

MODEL STRUCTURE

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

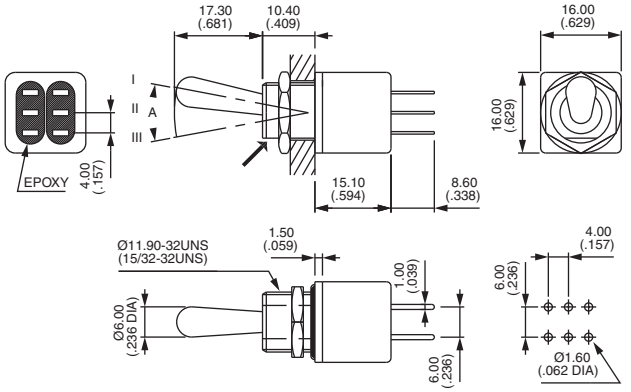
Fully sealed - black

A

Straight PC terminals - double pole ▲

	I	II	III
12246 X778	ON	-	ON

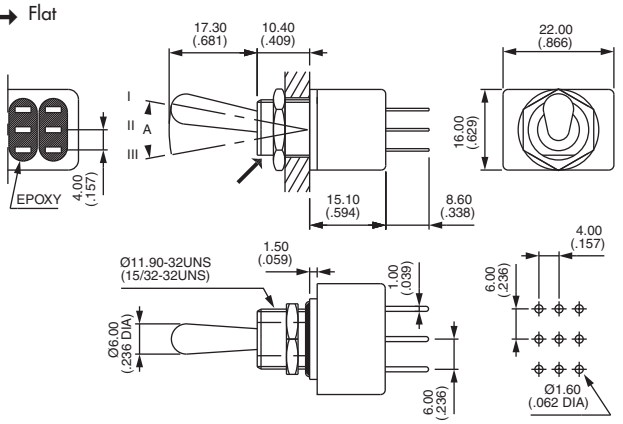
→ Flat



Straight PC terminals - three pole ▲

	I	II	III
12256 X778	ON	-	ON

→ Flat

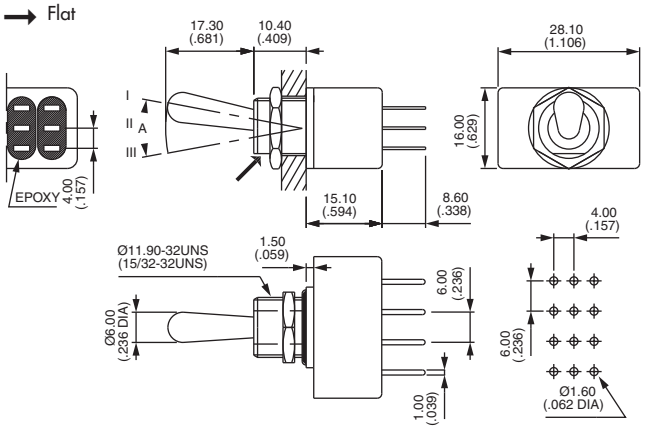


Straight PC terminals - four pole ▲

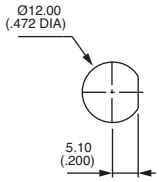
	I	II	III
12266 X778	ON	-	ON

Positions and connections, see next page.

→ Flat

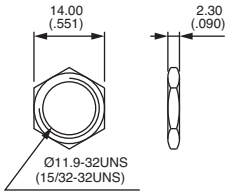


PANEL CUT-OUT



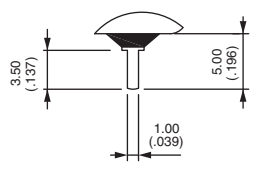
STANDARD HARDWARE

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.



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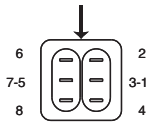
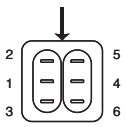
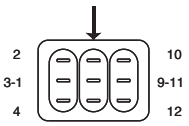
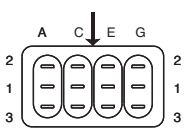
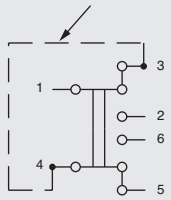
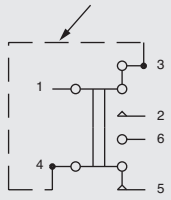
FUNCTION	LEVER POSITION AND CONNECTIONS I	II	III (Flat)	TERMINAL IDENTIFICATION
12146	ON (1-3)-4 (5-7)-8	-	ON (1-3)-2 (5-7)-6	
12147 12148 12149 12148CT	MOM ON ON MOM 1-2 4-5	OFF OFF OFF OFF	MOM MOM ON ON 1-3 4-6	→ Flat
12145	-	ON 1-2 4-5	MOM 1-3 4-6	
12144 12144-1R 12144-2R	ON MOM MOM 1-2 4-5	ON ON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

→ External jumper (added by customer)

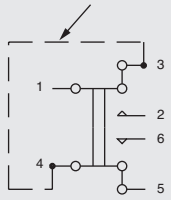
12144



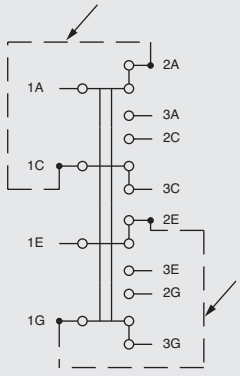
12144-1R



12144-2R



12164



12000X778 series

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

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OPTIONS

A

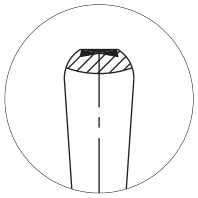
FLUORESCENT TIP

X778

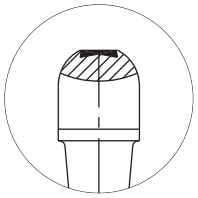
Blank None

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

Standard lever



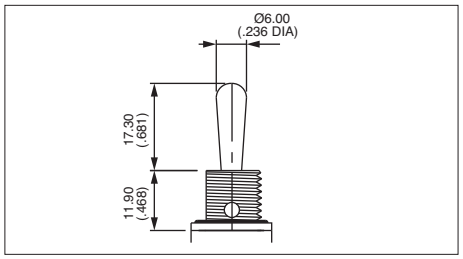
Locking lever



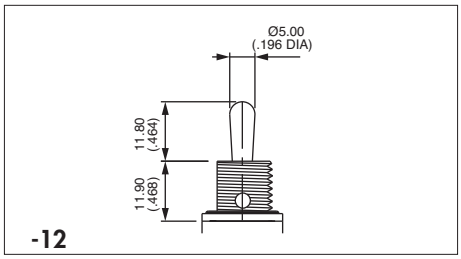
LEVERS / LOCKING LEVERS

X778

Dash compulsory before lever code.



Standard lever (leave blank)

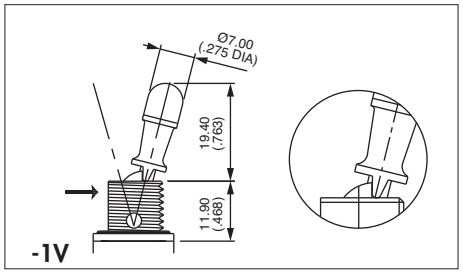


Short lever

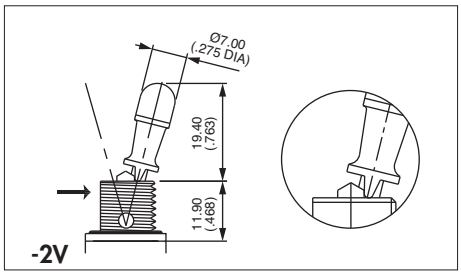
Sealing boots : see section H.
Security caps : see section I.

Locking levers

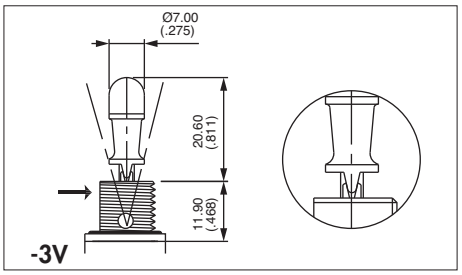
Flat



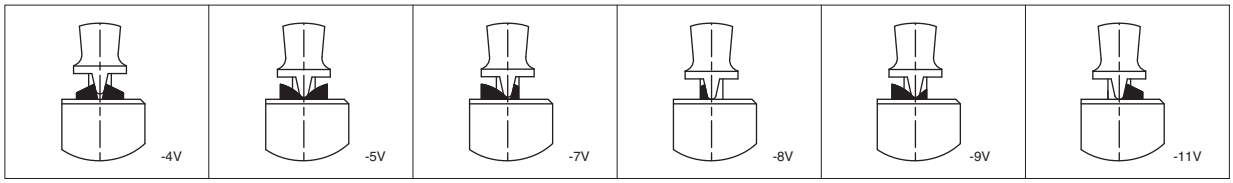
1 locked position (function 6)
Typical angle of throw : 26°



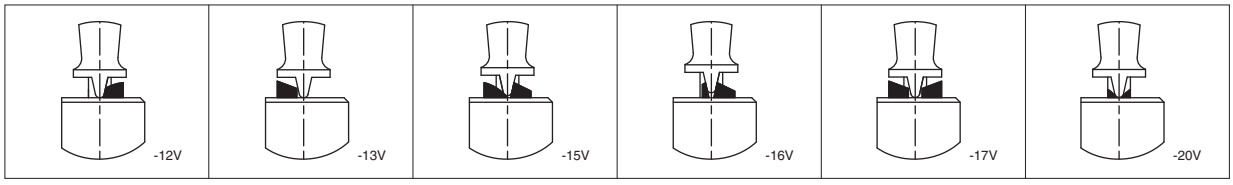
2 locked positions (function 6)
Typical angle of throw : 26°



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



Functions 9 & 4 | Functions 7 & 442R | Functions 8 & 441R | Functions 8, 9, 44 & 441R | Functions 8 & 441R | Functions 8, 9, 44 & 441R



Functions 8 & 441R | 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.

AGENCY APPROVAL

X778

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.