

13000X778 series

High performance pushbutton switches •
threaded bushing Ø 11.9 mm • momentary



DISTINCTIVE FEATURES

Fully sealed, black

Double shell case for high mechanical strength
and electrical insulation

CECC approved (CECC 96401-001)

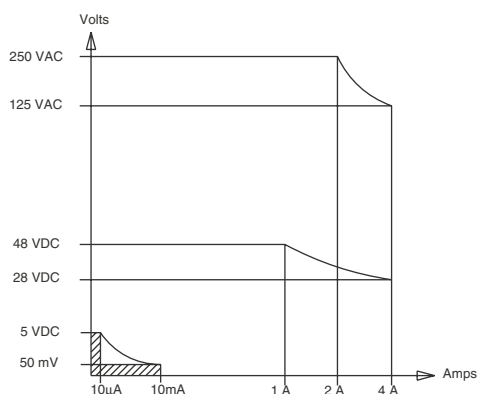
Highly reliable contacts

Compact size



ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load : 4 A 28 VDC
- Minimum load : 10 mA 50 mV, 10 μ A 5 VDC
When used above 300 mA 28 VDC, the gold plating is removed
on contact areas and is considered only as a protection
against oxidation during storage.
- Initial contact resistance : 10 m Ω max.
- Insulation resistance : 1,000 M Ω min. at 500 VDC
- 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 4 A 28 VDC : 10,000 cycles
- At low level (50 mV 10 mA) : 150,000 cycles



The company reserves the right to change specifications without notice.



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ENVIRONMENTAL SPECIFICATIONS

- Shock test : 50 g - 11 ms (IEC 68-2-27)
- Vibrations : 10-500 Hz - 10 g (IEC68-2-6)
- Operating temperature : -40 °C to +85 °C (-40 °F to +185 °F)
- Humidity test : 56 days, 93 % R.H., 40 °C (IEC 68-2-3)
- Salt spray test : 96 hours (IEC 68-2-11)



GENERAL SPECIFICATIONS

- Total travel : 2 mm (.078) - Pre-travel : 1 mm (.039)
- Torque : 1.50 Nm (1.10 Ft.lb) max. applied to nut
- Panel thickness : 5 mm (.196) max.



MATERIALS

- Case : diallylphthalate (DAP) with PBT external shell (epoxy sealed)
- Actuator : brass, black chrome plated
- Bushing : brass, black chrome plated
- Contacts : silver inlay - gold plated over nickel barrier

APEM products may be recycled at end-of-life for the re-claiming of valuable metal components.

AGENCY APPROVALS



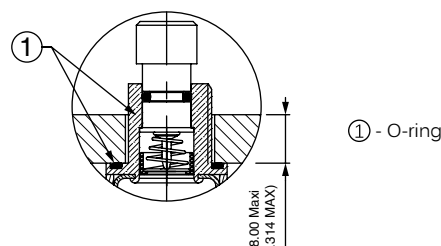
CECC 96401-001

Many double pole models have full CECC approval. Consult factory for details of approved models. To order switches marked CECC, complete appropriate box of ordering format.



SEALING

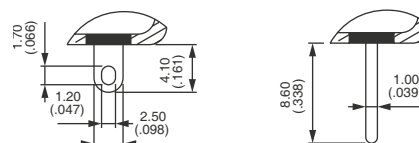
- Front panel sealing by two O-rings
- Panel seal withstands 1 bar pressure and remains sealed even when the switch is operated.
- Epoxy sealed terminals
- Splash-proof case



① - O-ring

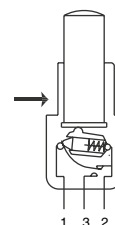


TERMINALS

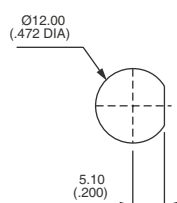


ELECTRICAL FUNCTION

→ FLAT



PANEL CUT-OUT



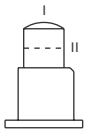
13000X778 series

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POSITIONS AND CONNECTIONS

Function	BUTTON POSITION AND CONNECTIONS		TERMINAL IDENTIFICATION
	I	II	
DOUBLE POLE	ON	MOM	→ FLAT
13245 13445	A 1-2 B 1-2	A 1-3 B 1-3	
THREE POLE			
13255 13455	A 1-2 B 1-2 C 1-2	A 1-3 B 1-3 C 1-3	

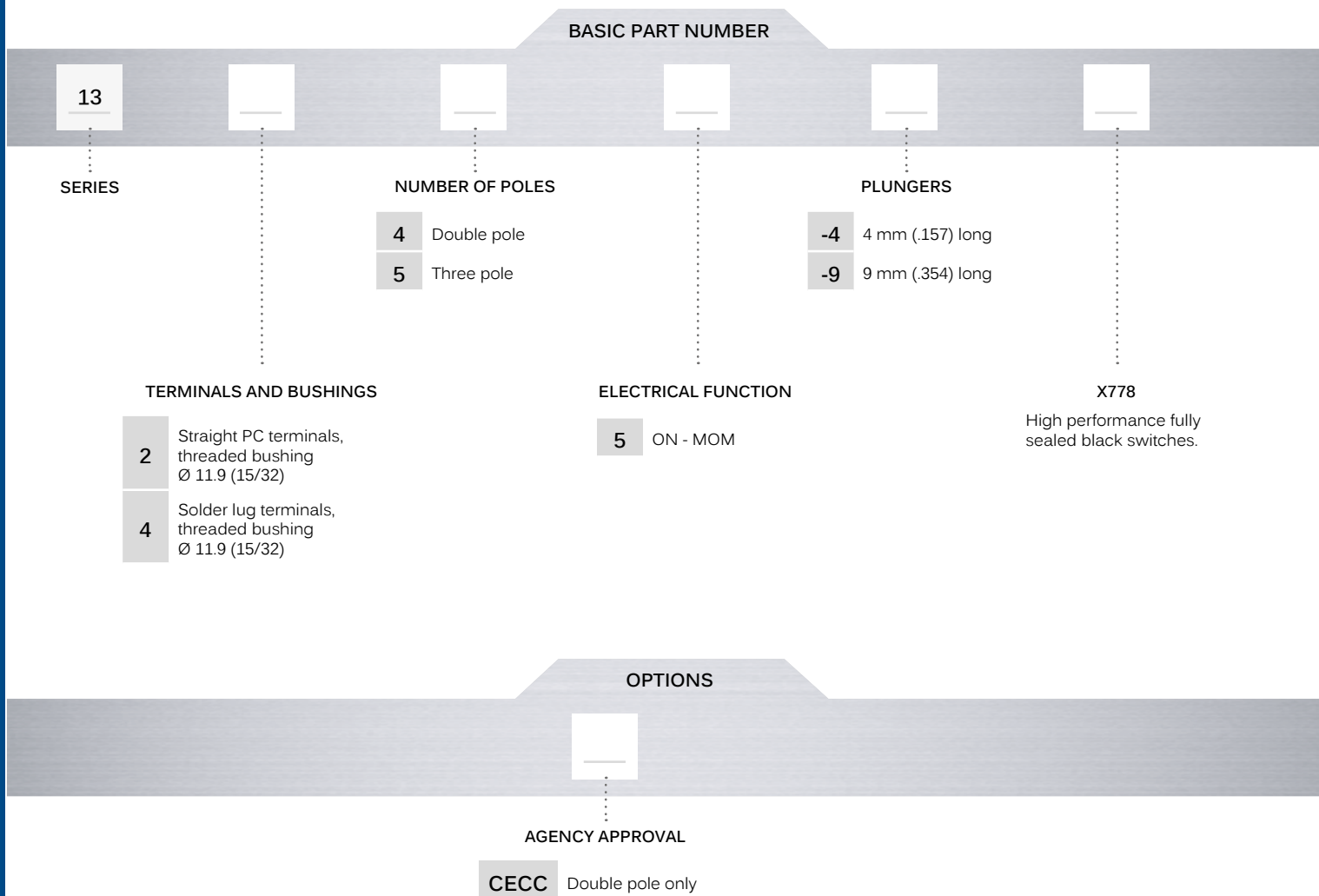


- Pre-travel : 1 mm (.039)
- Over-travel : 1 mm (.039)
- Total travel : 2 mm (.078)

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BUILD YOUR PART NUMBER



ABOUT THIS SERIES

On the following pages, you will find successively basic part numbers of switches and options in the same order as in above chart.

-  **Notice** : please note that not all combinations of above numbers are available. Refer to following pages for further information.
-  **Sealing boots** can be used to further protect the switches against dust and water. See "Sealing Boots" section of website.
-  **Mounting accessories** : standard hardware supplied with all models : 1 hex nut 14 (.551) across flats, part number U41. The nut is presented after basic models.
-  **Switch guard** available to prevent inadvertent plunger operation. See "Switch Guards" section of website.

13000X778 series

High performance pushbutton switches • threaded bushing Ø 11.9 mm • momentary

SOLDER LUG TERMINALS DOUBLE POLE - 4 MM (.157) PLUNGER



13445-4X778



ON



MOM

SOLDER LUG TERMINALS DOUBLE POLE - 9 MM (.354) PLUNGER



13445-9X778



ON



MOM

STRAIGHT PC TERMINALS DOUBLE POLE - 4 MM (.157) PLUNGER



13245-4X778



ON



MOM

STRAIGHT PC TERMINALS DOUBLE POLE - 9 MM (.354) PLUNGER



13245-9X778

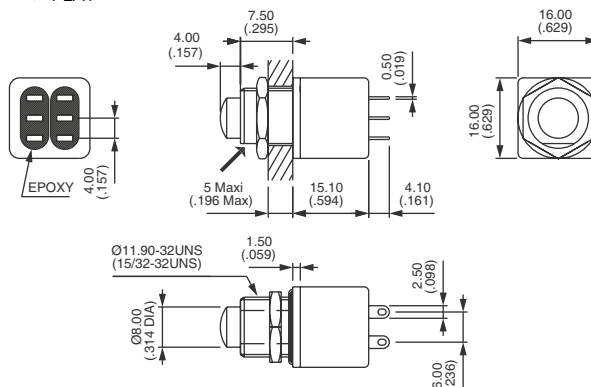


ON

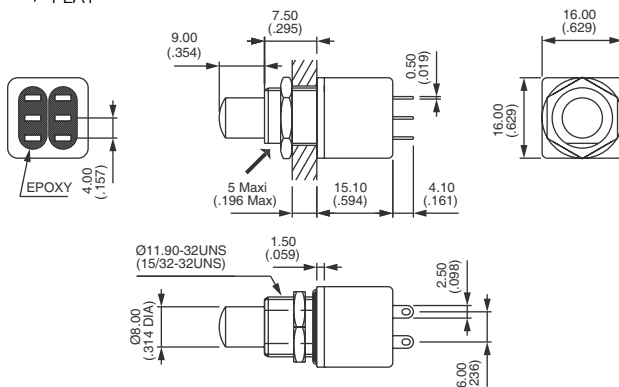


MOM

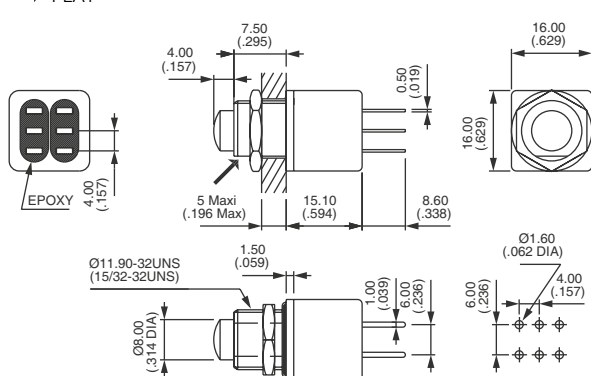
→ FLAT



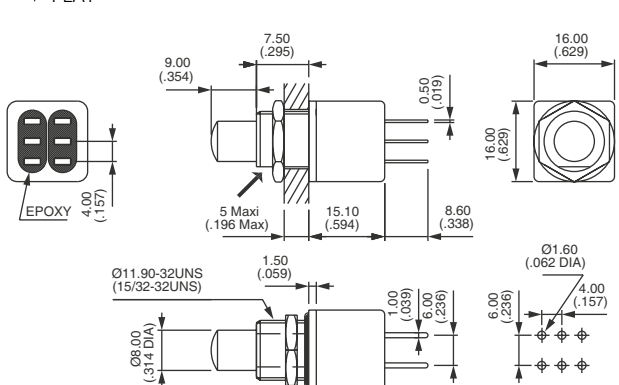
→ FLAT



→ FLAT



→ FLAT



13000X778 series

High performance pushbutton switches • threaded bushing Ø 11.9 mm • momentary

SOLDER LUG TERMINALS THREE POLE - 4 MM (.157) PLUNGER



13455-4X778



ON



MOM

SOLDER LUG TERMINALS THREE POLE - 9 MM (.354) PLUNGER



13455-9X778



ON



MOM

STRAIGHT PC TERMINALS THREE POLE - 4 MM (.157) PLUNGER



13255-4X778



ON



MOM

STRAIGHT PC TERMINALS THREE POLE - 9 MM (.354) PLUNGER



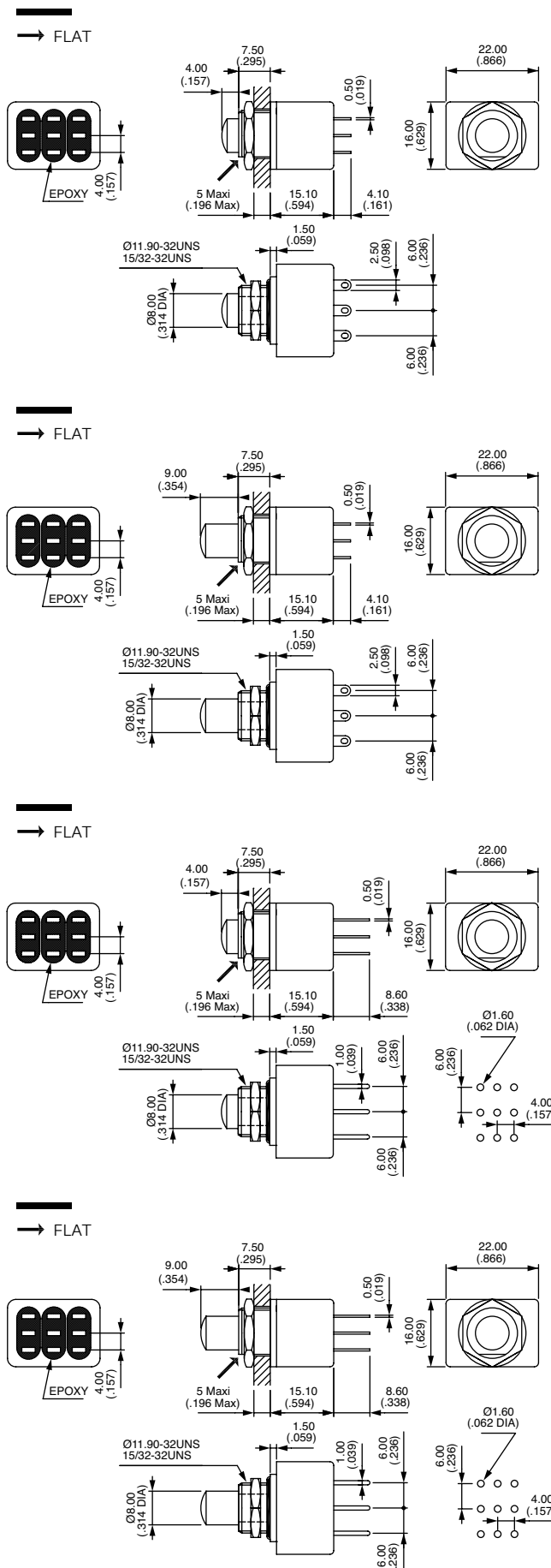
13255-9X778



ON



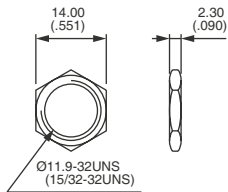
MOM



13000X778 series

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STANDARD HARDWARE - HEX NUT



U41 (black)

AGENCY APPROVAL

BASIC P/N

CECC CECC 96401-001 (double pole only)
Blank No agency approval required.

Marking : to order switches marked CECC, please complete above box with CECC.

13000X778 series

High performance pushbutton switches •
threaded bushing Ø 11.9 mm • alternate action



DISTINCTIVE FEATURES

Alternate action

Fully sealed at front and back

Double shell case for high mechanical strength and electrical insulation

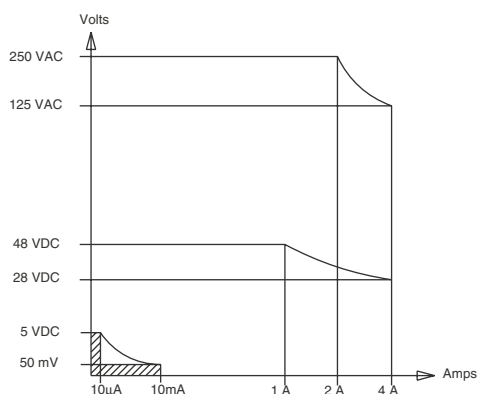
Highly reliable contacts

Compact size



ELECTRICAL SPECIFICATIONS

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- Minimum load : 10 mA 50 mV, 10 μ A 5 VDC
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- Dielectric strength :
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2,000 Vrms 50 Hz min. between poles
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- Shock test : 50 g - 11 ms (IEC 68-2-27)
- Vibrations : 10-500 Hz - 10 g (IEC68-2-6)
- Operating temperature : -40 °C to +85 °C (-40 °F to +185 °F)
- Humidity test : 56 days, 93 % R.H., 40 °C (IEC 68-2-3)
- Salt spray test : 96 hours (IEC 68-2-11)



GENERAL SPECIFICATIONS

- Total travel : 2.5 mm (.098)
- Torque : 1.50 Nm (1.10 Ft.lb) max. applied to nut
- Panel thickness : 8 mm (.315) max.



MATERIALS

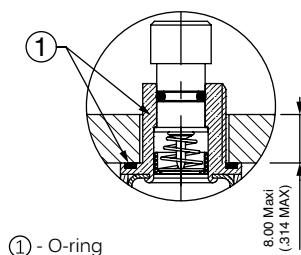
- Case : diallylphthalate (DAP) with PBT external shell (epoxy sealed)
- Actuator : brass, black chrome plated
- Bushing : brass, black chrome plated
- Contacts : silver inlay - gold plated over nickel barrier

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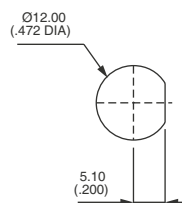


SEALING

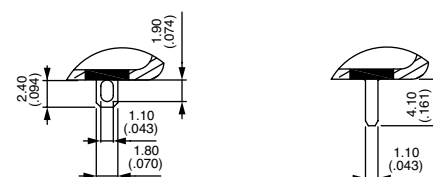
- Front panel sealing by two O-rings
- Panel seal withstands 1 bar pressure and remains sealed even when the switch is operated.
- Epoxy sealed terminals
- Splash-proof case



PANEL CUT-OUT

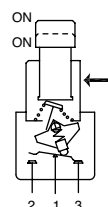


TERMINALS



ELECTRICAL FUNCTION

→ FLAT



POSITIONS AND CONNECTIONS

Function	BUTTON POSITION AND CONNECTIONS		TERMINAL IDENTIFICATION
	I	II	
	ON	ON	→ FLAT
13246	A 1-2	A 1-3	
13446	B 1-2	B 1-3	

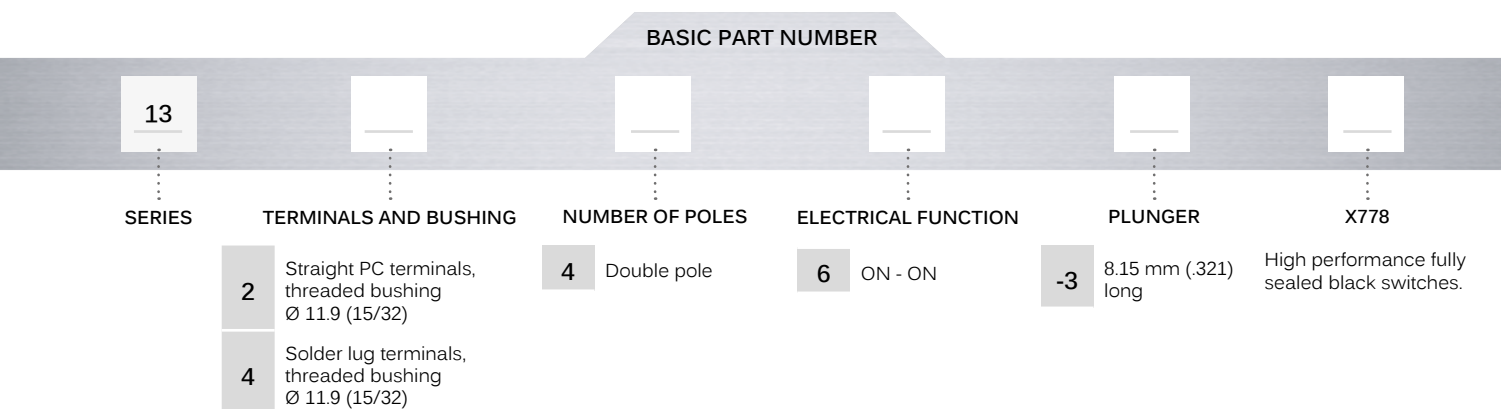


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BUILD YOUR PART NUMBER



ABOUT THIS SERIES

Complete part numbers are shown on next page.

- Sealing boots** can be used to further protect the switches against dust and water. See "Sealing boots" section of website.
- Mounting accessories** : standard hardware supplied with all models : 1 hex nut 14 (.551) across flats, part number U41. This nut is presented after basic part numbers.

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SOLDER LUG TERMINALS - DOUBLE POLE



13446-3X778

ON

ON

STRAIGHT PC TERMINALS - DOUBLE POLE

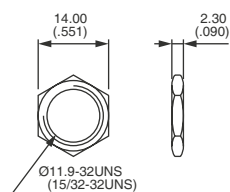


13246-3X778

ON

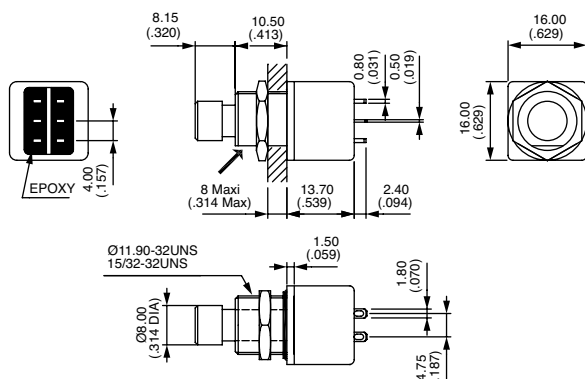
ON

STANDARD HARDWARE - HEX NUT



U41 (black)

→ FLAT



→ FLAT

