



## Features/Benefits

- Up to 10 poles per module
- Various contact terminals
- Various mounting & switch ganging configurations
- Mechanical indicator buttons
- RoHS compliant

## Typical Applications

- Audio selection
- Digital equipment interface
- Medical equipment interface

## Specifications

SWITCHING POWER: F module max. AC/DC: Silver: 50 VA/15W, Gold: 1 VA/300 mW.

SWITCHING VOLTAGE: F module max. AC/DC: Silver: 125/30V, Gold: 50/30 V.

SWITCHING CURRENT: F module max. AC/DC: Silver: 0.5A/0.5A, Gold: 0.04A/0.01A.

CARRYING CURRENT: Max at  $\Delta u = 20^{\circ}\text{C}$ : Silver: < 2A, Gold: <0.5A.

DIELECTRIC STRENGTH (50 Hz, 1 min.): Chassis/contact:  $\geq 1500\text{V}$  Between contacts:  $\geq 1500\text{V}$ .

OPERATING LIFE "OA/EE" (24V/200mA):  $> 10^5$  operations "GR":  $> 3.5 \times 10^4$  operations.

CONTACT RESISTANCE: Initial: Typical  $\leq 10\text{ m}\Omega$ , max. 20 m $\Omega$  After operating life:  $\leq 100\text{ m}\Omega$

INSULATION RESISTANCE:  $\geq 10^9\ \Omega$  between open contacts,  $\geq 10^9\ \Omega$  between chassis and contacts.

CAPACITANCE (at  $f = 10\text{ kHz}$ ):  $\leq 0.7\text{ pF}$  between 2 contacts.

TOTAL TRAVEL/LATCHING TRAVEL: 4.7mm/3.3mm (.185 inch/.130 inch).

All models and options are RoHS compliant and compatible.

**NOTE:** All models and options are RoHS compliant and compatible.

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

TYPICAL F OPERATING FORCE: 2U: 6.5N (650 grams); 4U: 6.5N (650 grams); 6U: 7.5N (750 grams); 8U: 9.0N (900 grams); 10U: 9.0N (900 grams).

EUROPEAN TYPICAL SF OPERATING FORCE:

2U:  $3.5\text{N} \pm 0.5\text{N}$  (350 grams  $\pm$  100 grams); 4U:  $5\text{N} \pm 1\text{N}$  (500 grams  $\pm$  100 grams); 6U:  $6.5\text{N} \pm 1\text{N}$  (650 grams  $\pm$  100 grams); 8U:  $9.0\text{N} \pm 1\text{N}$  (900 grams  $\pm$  100 grams).

OPERATING TEMPERATURE RANGE:  $-40^{\circ}\text{C}$  to  $70^{\circ}\text{C}$ .

## Materials

HOUSING: Polycarbonate UL 94V-0 or polyester UL 94V-0.

ACTUATOR: Polyester UL 94V-0.

MOVABLE CONTACTS: Bimetal brass, silver plated, gold plate over nickel.

STATIONARY CONTACTS & TERMINALS: Brass, silver plated, gold plated.

TERMINAL BOARD: Polyester UL 94V-0.

RETURN SPRING: Music wire.

TERMINAL SEAL: RTV adhesive sealant.

CHASSIS: Steel.

LOCKOUT PIN: Steel.

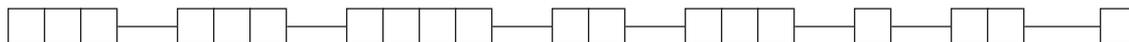
BLOCKERS: Steel.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-88 thru A-95. For additional options not shown in catalog, consult Customer Service Center.

If requesting only a switch, select either a North American or European switch as noted below. Chassis and buttons are sold separately. If multiple stations are selected, we will assume all switches are the same unless noted otherwise.

## North American Order Code - Switch Only



### Designation

- F** F Series
- FLT** Light touch F series
- ZF** Central mounted F series

### Contact Arrangement

- 2U** 2PDT
- 4U** 4PDT
- 6U** 6PDT
- 8U** 8PDT
- 10U** 10PDT

### Mechanical Function

- OA** Momentary
- EE** Alternate (push-push)
- GR** Interlock
- AOR** Central release
- OASP** Momentary with lockout
- GRSP** Interlock with lockout

### Terminal Sealing

- (NONE)** None
- TB** Top/bottom

### Terminal Style

- (NONE)** Solder lugs & PC pins
- 01A** Cut solder lugs
- 01B** Cut PC pins, for other configurations, consult factory

### Electrical Function

- (NONE)** BBM Break-Before-Make
- M** MBB (special) Make-Before-Break

### Contact Material

- (NONE)** Silver, AG
- AU** Gold

### Dress nut\*

\*Central mounted F series only

- (NONE)** No dress nut
- B** Black
- C** Chrome

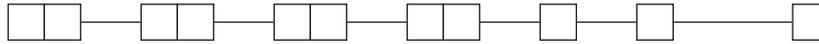


# F Series Pushbutton Switches

Pushbutton

A

## European Order Code - Switch Only



### Designation

- SF** F Series
- ZF** Central mounted F series

### Contact Arrangement

- 2U** 2PDT
- 4U** 4PDT
- 6U** 6PDT
- 8U** 8PDT

### Mechanical Function

- OA** Momentary
- EE** Alternate (push-push)
- GR** Interlock

### Terminal Style

- (NONE)** Solder lugs & PC pins

- LB** Cut solder lugs
- PB** Cut PC pins, for other configurations, consult factory

### Electrical Function

- (NONE)** BBM

### Contact Material

- (NONE)** Silver, AG
- P** Gold

### Dress nut\*

\*Central mounted F series only

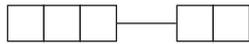
- (NONE)** No dress nut

- B** Black
- C** Chrome

\*Minimum order quantities apply.

## Order Code - Buttons

### Solid Buttons



### Style

- F01** FMR
- F02** FG\*
- F12** FSC
- F13** FSD
- F14** FU12
- F15** FSB
- F16** FE
- F19** FA
- F21** F001

### Button Color

- 01** Black
- 02** White
- 03** Red
- 04** Light gray

### Mechanical Indicator Buttons



### Style

- F01** FA100
- F02** FA101
- F07** FA120
- F08** FA201
- F11** FA200\*

### Shell Color

- 01** Black

### Out Position Color

- 01** Black

### In Position Color

- 02** White
- 06** Yellow
- 07** Blue
- 08** Green
- 12** Orange

\*Button options for central mounting configurations, use 'FG' for central mount with chrome dress nut, use 'FA200' for central mount with black dress nut.

## BUTTON REMOVAL

A button of a push-push switch should only be removed in the "OFF" non-latching position.

## Order Code - Chassis

To order a switch with chassis, create the switch part number listed above and add the Chassis part number configurator information at the end of the part number.

Note: We do not guarantee or recommend interlocking beyond 10 stations.



### No. of Stations

- 01 thru 23** Comes with standard .094 (2,4mm) mounting holes  
Note: Single station chassis available with special mounting configurations, consult factory.

### Spacing between Stations

- 00** Single station
- 10** 10mm
- 12.5** 12.5mm
- 15** 15mm
- 17.5** 17.5mm
- 20** 20mm

### Special Acknowledgements

See note

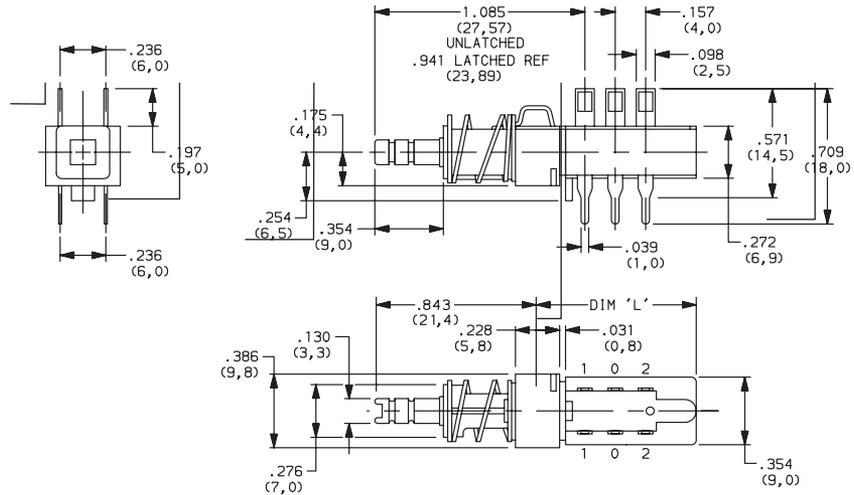
\*Minimum order quantities apply.



### SWITCHES WITH STANDARD OPTIONS

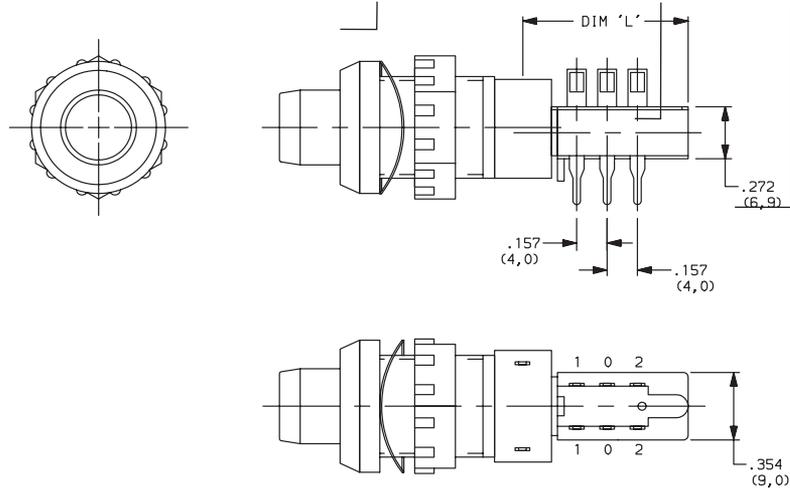
#### F2UEE

| CONTACT ARRANGEMENT | LENGTH DIM 'L' |
|---------------------|----------------|
| 2U                  | 0.827 (21,00)  |
| 4U                  | 1.300 (33,00)  |
| 6U                  | 1.770 (45,00)  |
| 8U                  | 2.240 (57,00)  |
| 10U                 | 2.720 (69,00)  |



#### ZF2UEEBF11010108

| CONTACT ARRANGEMENT | LENGTH DIM 'L' |
|---------------------|----------------|
| 2U                  | 0.827 (21,00)  |
| 4U                  | 1.300 (33,00)  |
| 6U                  | 1.770 (45,00)  |
| 8U                  | 2.240 (57,00)  |
| 10U                 | 2.720 (69,00)  |



### DESIGNATION



#### Designation, North America

- F** F Series
- FLT** Light touch F series
- ZF** Central mounted F series

#### Designation, Europe

- SF** F Series
- ZF** Central mounted F series

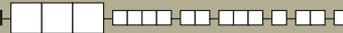


Third Angle Projection  
Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



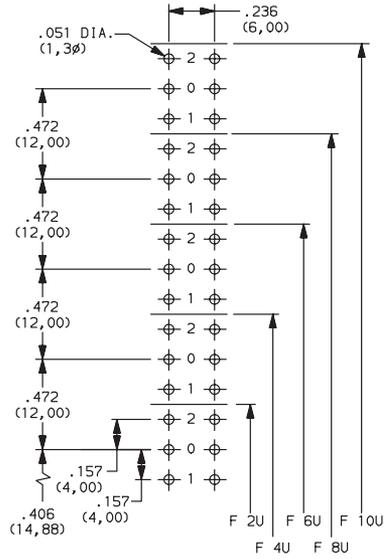
# F Series Pushbutton Switches

## CONTACT ARRANGEMENT



| OPTION CODE | NO. OF POLES | SCHEMATIC |
|-------------|--------------|-----------|
| <b>2U</b>   | 2PDT         |           |
| <b>4U</b>   | 4PDT         | 2X        |
| <b>6U</b>   | 6PDT         | 3X        |
| <b>8U</b>   | 8PDT         | 4X        |
| <b>10U</b>  | 10PDT        | 5X        |

## PC MOUNTING



## MECHANICAL FUNCTION



### North America

| OPTION CODE | FUNCTION               |
|-------------|------------------------|
| <b>OA</b>   | Momentary              |
| <b>EE</b>   | Alternate (push-push)  |
| <b>GR</b>   | Interlock              |
| <b>AOR</b>  | Central release        |
| <b>OASP</b> | Momentary with lockout |
| <b>GRSP</b> | Interlock with lockout |

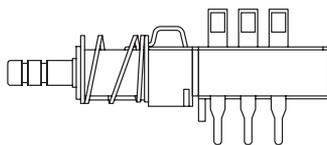
### Europe

| OPTION CODE | FUNCTION              |
|-------------|-----------------------|
| <b>OA</b>   | Momentary             |
| <b>EE</b>   | Alternate (push-push) |
| <b>GR</b>   | Interlock             |

## TERMINAL SEALING

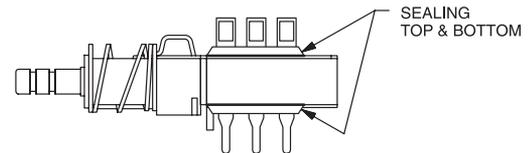


**(NONE)** NO SEAL



F2UEE shown in example above.

**TB** TOP & BOTTOM



**NOTE:** Available for North America only



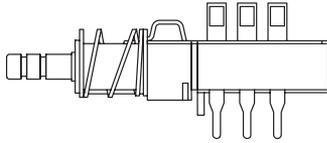
Third Angle Projection



### TERMINAL STYLE

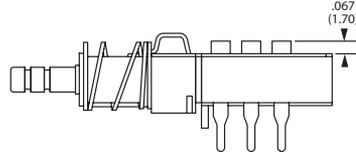


**(NONE)** SOLDER LUGS & PC PINS



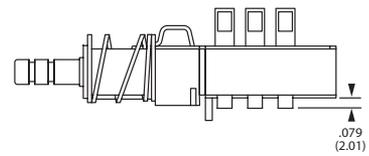
**01A** CUT SOLDER LUGS (North America)

**LB** CUT SOLDER LUGS (Europe)



**01B** CUT PC PINS (North America)

**PB** CUT PC PINS (Europe)



### ELECTRICAL FUNCTION



| OPTION CODE   | FUNCTION                          |
|---------------|-----------------------------------|
| <b>(NONE)</b> | BBM Non-shorting                  |
| <b>M</b>      | MBB Shorting (North America only) |

### CONTACT MATERIAL



| NORTH AMERICA OPTION CODE | EUROPE OPTION CODE | RoHS COMPLIANT * | RoHS COMPATIBLE * | MATERIAL   | RATING                             |
|---------------------------|--------------------|------------------|-------------------|------------|------------------------------------|
| <b>(NONE)</b>             | <b>(NONE)</b>      | YES              | YES               | SILVER, AG | 50 VA/15 W; 125/30 V; 0.5/0.5 A    |
| <b>AU</b>                 | <b>P</b>           | YES              | YES               | GOLD       | 1 VA/300mW; 50/30 V; 0.04 A/0.01 A |

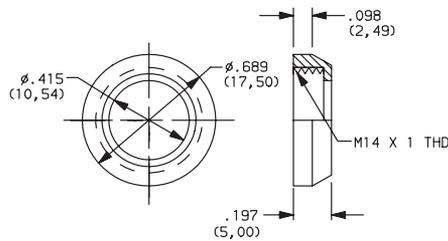
\* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

### DRESS NUT

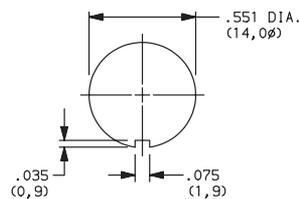


**(NONE)** NO DRESS NUT FOR F & F/LT DESIGNATIONS

**B** BLACK

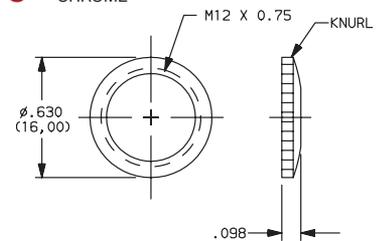


#### PANEL CUTOUT

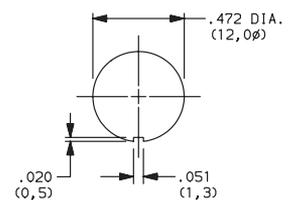


NOTE: Available with ZF designation and FA200 buttons.

**C** CHROME



#### PANEL CUTOUT



NOTE: Available with ZF designation and FG button.



Third Angle Projection

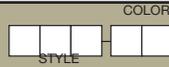


# F Series Pushbutton Switches

Pushbutton

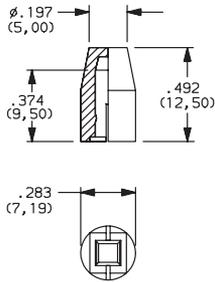
A

## SOLID BUTTON

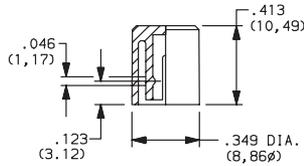


### STYLE

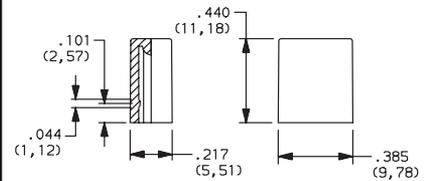
**F01** FMR



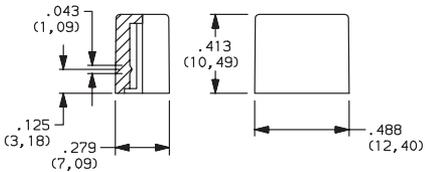
**F02** FG



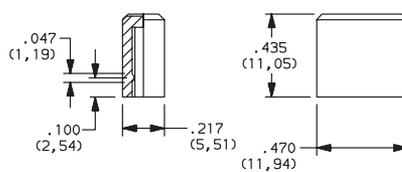
**F12** FSC



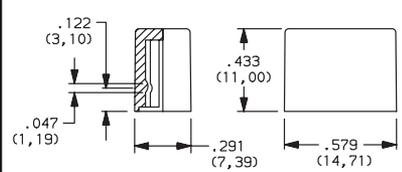
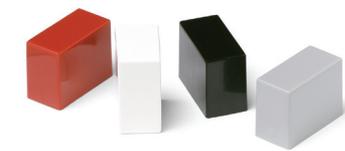
**F13** FSD



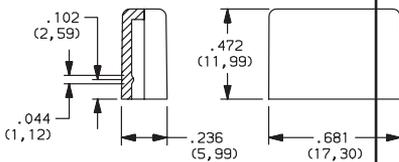
**F14** FU12



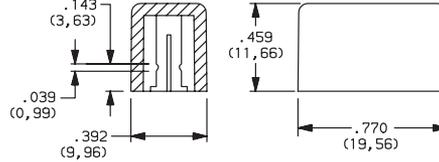
**F15** FSB



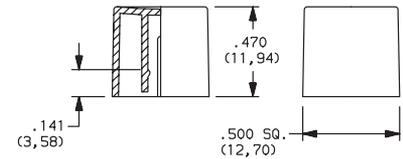
**F16** FE



**F19** FA



**F21** F001



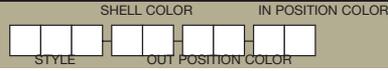
| OPTION CODE | COLOR    |
|-------------|----------|
| <b>01</b>   | BLACK    |
| <b>02</b>   | WHITE    |
| <b>03</b>   | RED      |
| <b>04</b>   | LT. GRAY |

# F Series Pushbutton Switches



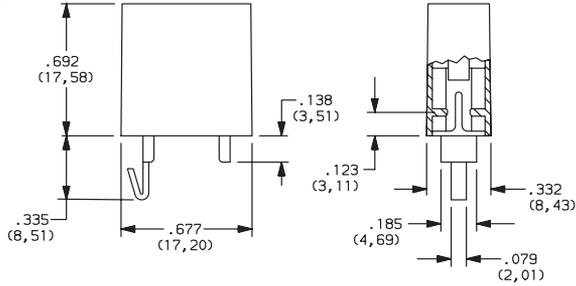
A Pushbutton

## MECHANICAL BUTTON

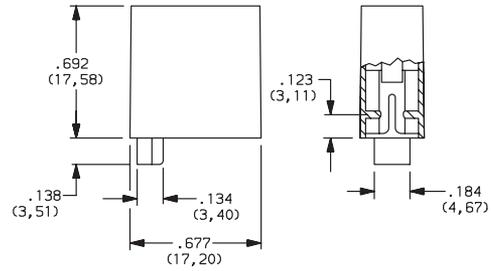


### STYLE

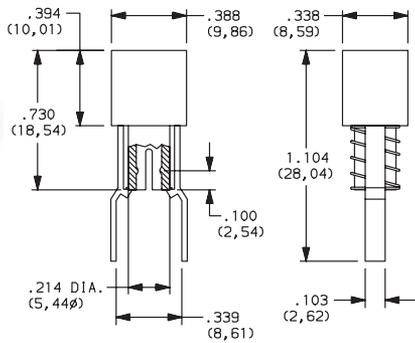
**F01** FA100



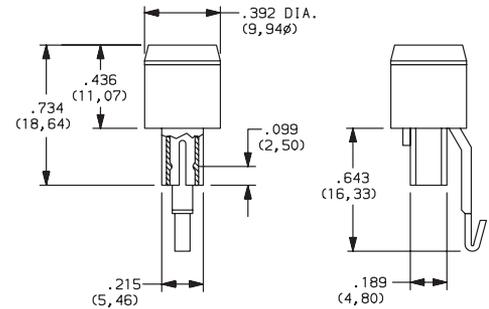
**F02** FA101



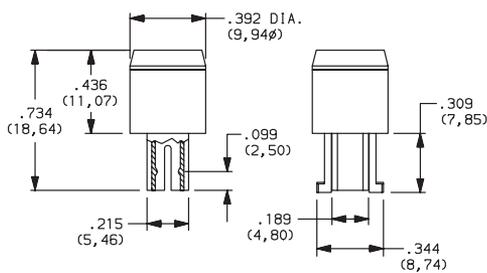
**F07** FA120



**F08** FA201



**F11** FA200



### SHELL COLOR

**01** BLACK

### OUT POSITION COLOR

**01** BLACK

### IN POSITION COLOR

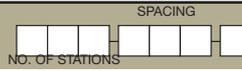
| OPTION CODE | COLOR  |
|-------------|--------|
| <b>02</b>   | WHITE  |
| <b>06</b>   | YELLOW |
| <b>07</b>   | BLUE   |
| <b>08</b>   | GREEN  |
| <b>12</b>   | ORANGE |



# F Series Pushbutton Switches

Pushbutton  
A

**CHASSIS**



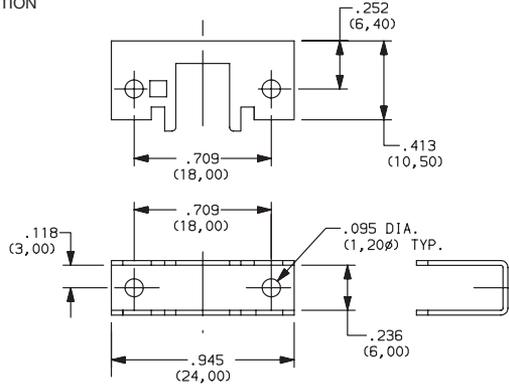
## NUMBER OF STATIONS

**C00 Thru C10** Comes with standard 0.094 (2,44mm) mounting holes

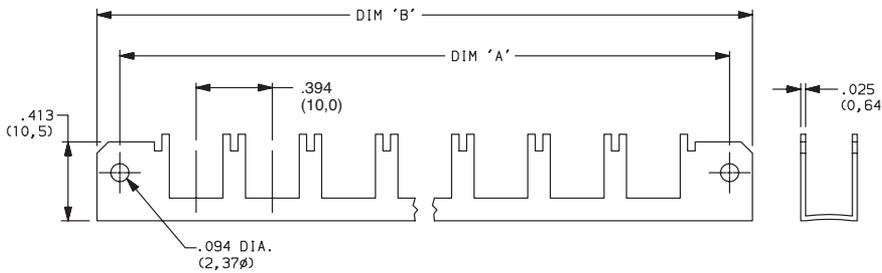
**NOTE:** Single station chassis available with mounting configurations, consult factory.

## SPACING

**00** SINGLE STATION

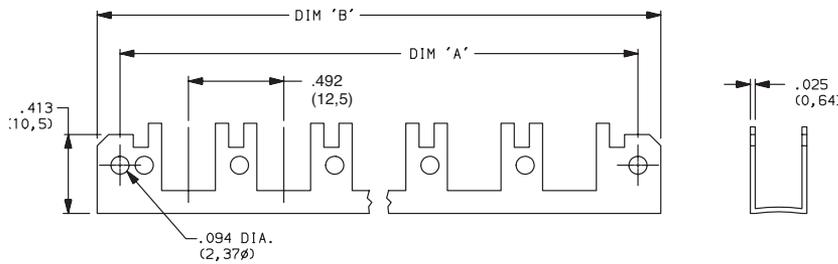


**10** 10mm

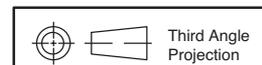


| No. of Stations | Dim. 'A'          | Dim. 'B'          | Tolerance |
|-----------------|-------------------|-------------------|-----------|
| 2               | 1.182<br>(30,02)  | 1.418<br>(36,02)  | 0.005     |
| 3               | 1.575<br>(40,01)  | 1.811<br>(46,00)  | 0.010     |
| 4               | 1.969<br>(50,01)  | 2.205<br>(56,01)  | 0.010     |
| 5               | 2.363<br>(60,02)  | 2.599<br>(66,01)  | 0.010     |
| 6               | 2.757<br>(70,03)  | 2.993<br>(76,02)  | 0.015     |
| 7               | 3.150<br>(80,01)  | 3.386<br>(86,00)  | 0.015     |
| 8               | 3.544<br>(90,02)  | 3.780<br>(96,01)  | 0.015     |
| 9               | 3.938<br>(100,03) | 4.174<br>(106,02) | 0.015     |
| 10              | 4.331<br>(110,01) | 4.567<br>(116,00) | 0.015     |

**12.5** 12.5mm



| No. of Stations | Dim. 'A'          | Dim. 'B'          | Tolerance |
|-----------------|-------------------|-------------------|-----------|
| 2               | 1.200<br>(30,48)  | 1.436<br>(36,47)  | 0.005     |
| 3               | 1.692<br>(42,98)  | 1.928<br>(48,97)  | 0.010     |
| 4               | 2.184<br>(55,47)  | 2.420<br>(61,47)  | 0.010     |
| 5               | 2.676<br>(67,97)  | 2.912<br>(73,96)  | 0.010     |
| 6               | 3.169<br>(80,49)  | 3.405<br>(86,49)  | 0.015     |
| 7               | 3.661<br>(92,99)  | 3.897<br>(98,98)  | 0.015     |
| 8               | 4.153<br>(105,49) | 4.389<br>(111,48) | 0.015     |
| 9               | 4.645<br>(117,98) | 4.881<br>(123,98) | 0.015     |
| 10              | 5.137<br>(130,48) | 5.373<br>(136,47) | 0.015     |



Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change



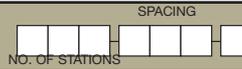
29 may 19

# F Series Pushbutton Switches



A Pushbutton

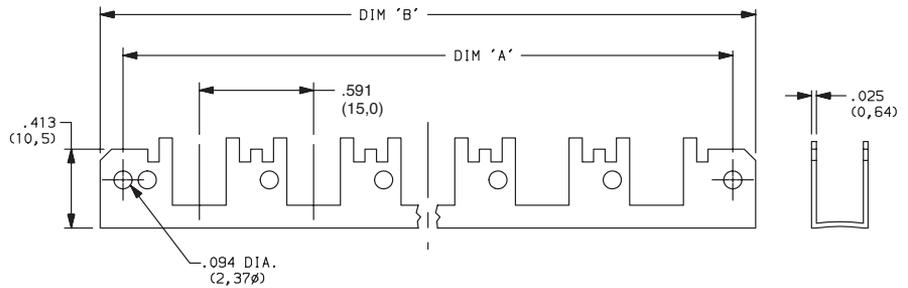
CHASSIS



## SPACING

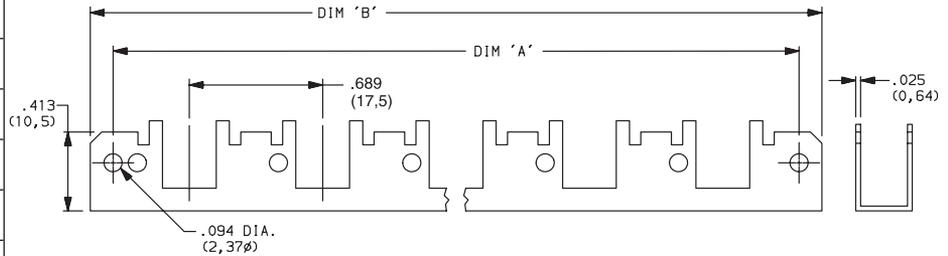
### 15 15mm

| No. of Stations | Dim. 'A'          | Dim. 'B'          | Tolerance |
|-----------------|-------------------|-------------------|-----------|
| 2               | 1.374<br>(34,90)  | 1.615<br>(41,02)  | 0.005     |
| 3               | 1.969<br>(50,01)  | 2.205<br>(56,01)  | 0.010     |
| 4               | 2.560<br>(65,02)  | 2.796<br>(71,02)  | 0.010     |
| 5               | 3.150<br>(80,01)  | 3.386<br>(86,00)  | 0.010     |
| 6               | 3.741<br>(95,02)  | 3.977<br>(101,02) | 0.015     |
| 7               | 4.332<br>(110,03) | 4.568<br>(116,03) | 0.015     |
| 8               | 4.922<br>(125,02) | 5.158<br>(131,01) | 0.015     |
| 9               | 5.513<br>(140,03) | 5.749<br>(146,02) | 0.015     |
| 10              | 6.103<br>(155,02) | 6.339<br>(161,01) | 0.015     |



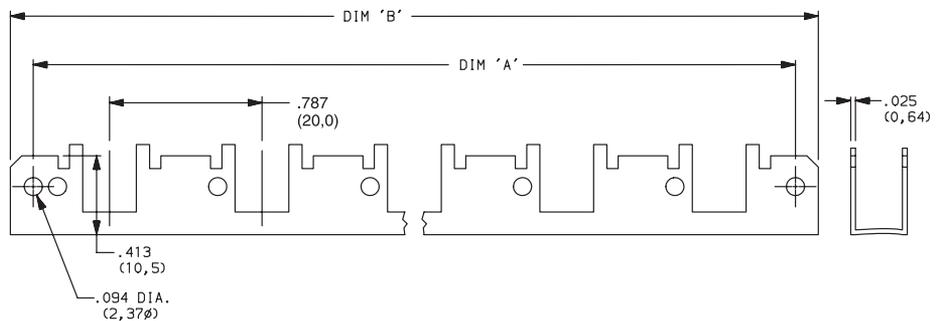
### 17.5 17.5mm

| No. of Stations | Dim. 'A'          | Dim. 'B'          | Tolerance |
|-----------------|-------------------|-------------------|-----------|
| 2               | 1.477<br>(37,52)  | 1.713<br>(43,51)  | 0.005     |
| 3               | 2.166<br>(55,02)  | 2.402<br>(61,01)  | 0.010     |
| 4               | 2.855<br>(75,52)  | 3.091<br>(78,51)  | 0.010     |
| 5               | 3.544<br>(90,02)  | 3.780<br>(96,01)  | 0.010     |
| 6               | 4.233<br>(107,52) | 4.469<br>(113,51) | 0.015     |
| 7               | 4.922<br>(125,02) | 5.158<br>(131,01) | 0.015     |
| 8               | 5.611<br>(142,52) | 5.847<br>(148,51) | 0.015     |
| 9               | 6.300<br>(160,02) | 6.536<br>(166,01) | 0.015     |
| 10              | 6.989<br>(177,52) | 7.225<br>(183,52) | 0.015     |



### 20 20mm

| No. of Stations | Dim. 'A'          | Dim. 'B'          | Tolerance |
|-----------------|-------------------|-------------------|-----------|
| 2               | 1.575<br>(40,01)  | 1.811<br>(46,00)  | 0.005     |
| 3               | 2.363<br>(60,02)  | 2.599<br>(66,01)  | 0.010     |
| 4               | 3.150<br>(80,01)  | 3.386<br>(86,00)  | 0.010     |
| 5               | 3.938<br>(100,03) | 4.174<br>(106,02) | 0.010     |
| 6               | 4.725<br>(120,02) | 4.961<br>(126,01) | 0.015     |
| 7               | 5.512<br>(140,00) | 5.748<br>(146,00) | 0.015     |
| 8               | 6.300<br>(160,02) | 6.536<br>(166,01) | 0.015     |
| 9               | 7.087<br>(180,01) | 7.323<br>(186,00) | 0.015     |
| 10              | 7.875<br>(200,03) | 8.111<br>(206,02) | 0.015     |



Third Angle Projection



29 may 19

Dimensions are shown: Inches (mm)  
Specifications and dimensions subject to change

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