



A

Pushbutton

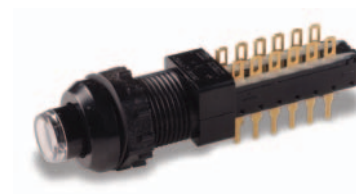
F Series Pushbutton Switches

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 du = 20C: Silver: < 2A, Gold: <0.5A.

DIELECTRIC STRENGTH (50 Hz, 1 min.): Chassis/contact: ^1500V
Between contacts: ^1500V.

OPERATING LIFE "OA/EE" (24V/200mA): >10⁵ operations
"GR": >3.5 x 10⁴ operations.

CONTACT RESISTANCE: Initial: Typical %10 mΩ, max. 20 mΩ
After operating life: %100 mΩ

INSULATION RESISTANCE: ^10⁹ Ω between open contacts,
^10⁹ Ω between chassis and contacts.

CAPACITANCE (at f = 10 kHz): %0.7 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: 3.5N±0.5N (350 grams±100 grams); 4U: 5N±1N (500 grams±100 grams); 6U: 6.5N±1N (650 grams±100 grams); 8U: 9.0N±1N (900 grams±100 grams).

OPERATING TEMPERATURE RANGE: -40°C to 70°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-89 thru A-97. 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

| | | | | | | | |
|---|---|---|---|--|---|---|---|
| <div>Designation</div> <div>F F Series</div> <div>FLT Light touch F series</div> <div>ZF Central mounted F series</div> | <div>Contact Arrangement</div> <div>2U 2PDT</div> <div>4U 4PDT</div> <div>6U 6PDT</div> <div>8U SPDT</div> <div>10U 10PDT</div> | <div>Mechanical Function</div> <div>OA Momentary</div> <div>EE Alternate (push-push)</div> <div>GR Interlock</div> <div>AOR Central release</div> <div>OASP Momentary with lockout</div> <div>GRSP Interlock with lockout</div> | <div>Terminal Sealing</div> <div>(NONE) None</div> <div>TB Top/bottom</div> | <div>Terminal Style</div> <div>(NONE) Solder lugs & PC pins</div> <div>01A Cut solder lugs</div> <div>01B Cut PC pins, for other configurations, consult factory</div> | <div>Electrical Function</div> <div>(NONE) BBM Break-Before-Make</div> <div>M MBB (special) Make-Before-Break</div> | <div>Contact Material</div> <div>(NONE) Silver, AG</div> <div>AU Gold</div> | <div>Dress nut*</div> <div>*Central mounted F series only</div> <div>(NONE) No dress nut</div> <div>B Black</div> <div>C Chrome</div> |
|---|---|---|---|--|---|---|---|



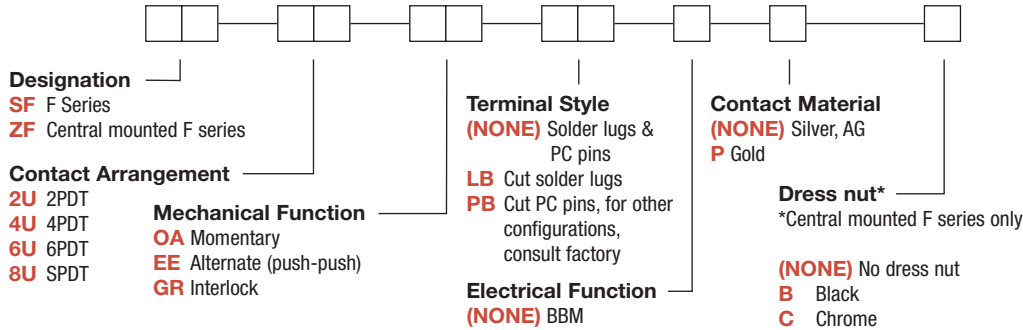
Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

F Series
Pushbutton Switches



Pushbutton

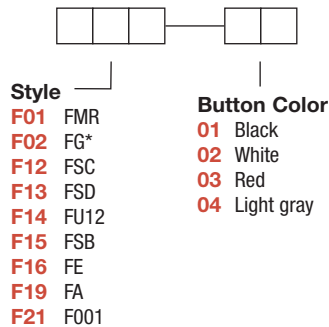
European Order Code - Switch Only



*Minimum order quantities apply.

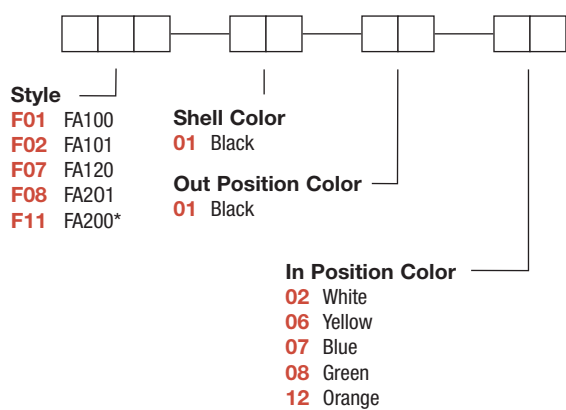
Order Code - Buttons

Solid Buttons



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

Mechanical Indicator Buttons



BUTTON REMOVAL

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



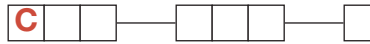


F Series Pushbutton Switches

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

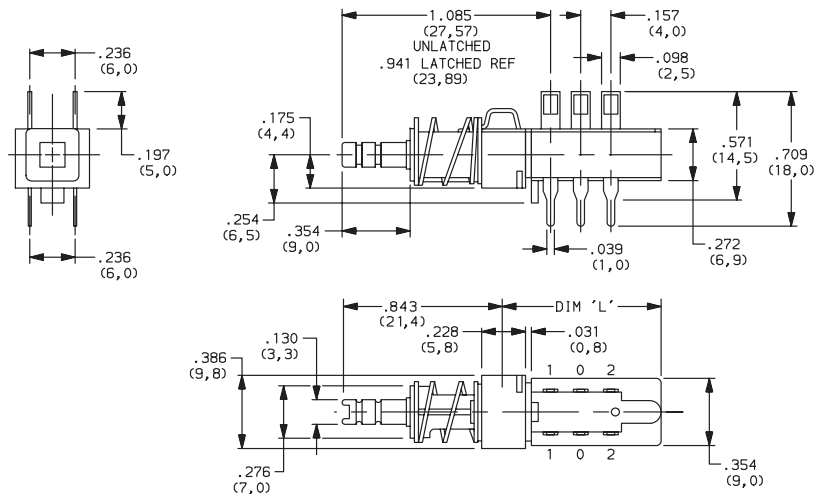
See note

*Minimum order quantities apply.

SWITCHES WITH STANDARD OPTIONS

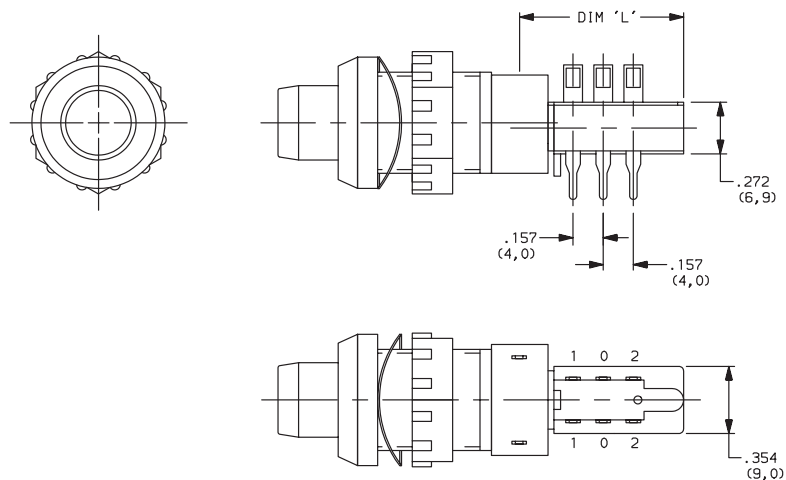
F2UEE

| 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) |



Third Angle
Projection

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



F Series
Pushbutton Switches



A
Pushbutton

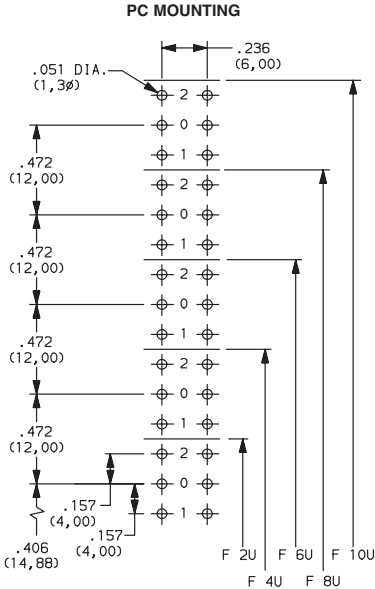
DESIGNATION

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

CONTACT ARRANGEMENT

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



MECHANICAL FUNCTION

North America

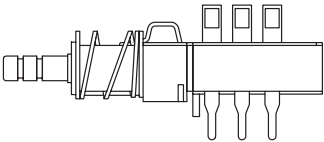
| OPTION CODE | FUNCTION |
|-------------|------------------------|
| OA | Momentary |
| EE | Alternate (push-push) |
| GR | Interlock |
| AOR | Central release |
| OASP | Momentary with lockout |
| GRSP | Interlock with lockout |

Europe

| OPTION CODE | FUNCTION |
|-------------|-----------------------|
| OA | Momentary |
| EE | Alternate (push-push) |
| GR | Interlock |

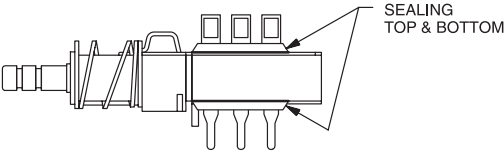
TERMINAL SEALING

(NONE) NO SEAL

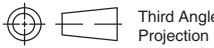


F2UEE shown in example above.

TB TOP & BOTTOM



NOTE: Available for North America only



Third Angle
Projection



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



Pushbutton
A

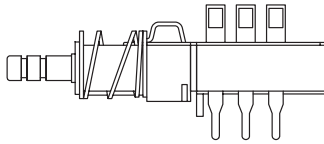
F Series Pushbutton Switches

TERMINAL STYLE



(NONE)

SOLDER LUGS & PC PINS

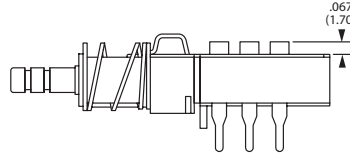


01A

CUT SOLDER LUGS (North America)

LB

CUT SOLDER LUGS (Europe)

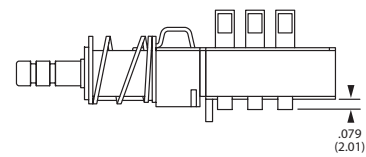


01B

CUT PC PINS (North America)

PB

CUT PC PINS (Europe)



ELECTRICAL FUNCTION



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

CONTACT MATERIAL



| NORTH AMERICA OPTION CODE | EUROPE OPTION CODE | RoHS COMPLIANT * | RoHS COMPATIBLE * | MATERIAL | RATING |
|------------------------------|-----------------------|---------------------|----------------------|------------|------------------------------------|
| (NONE) | (NONE) | YES | YES | SILVER, AG | 50 VA/15 W; 125/30 V; 0.5/0.5 A |
| AU | P | 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

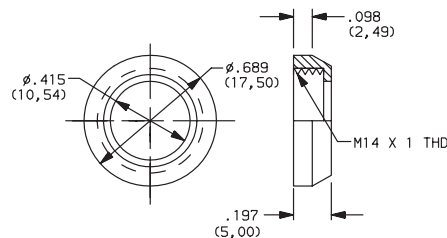


(NONE)

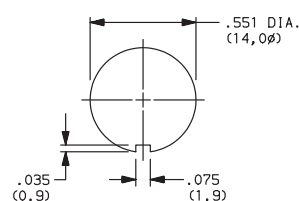
NO DRESS NUT FOR F & F/LT
DESIGNATIONS

B

BLACK



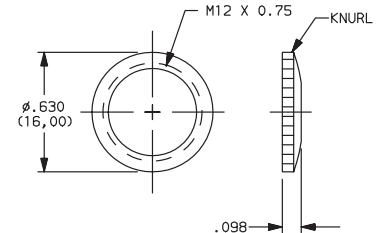
PANEL CUTOUT



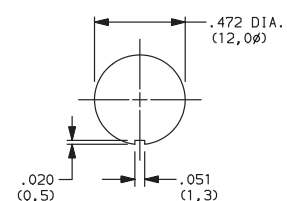
NOTE: Available with ZF designation and FA200 buttons.

C

CHROME



PANEL CUTOUT



NOTE: Available with ZF designation and
FG button.



Third Angle
Projection

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



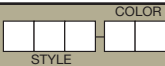
F Series Pushbutton Switches



A

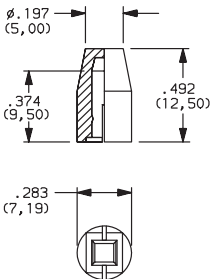
Pushbutton

SOLID BUTTON

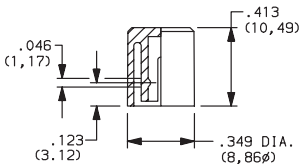
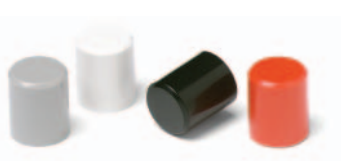


STYLE

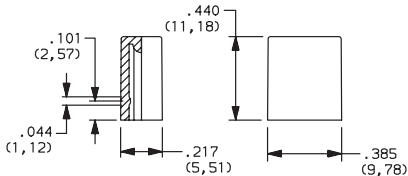
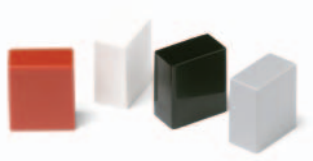
F01 FMR



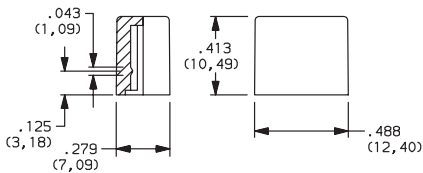
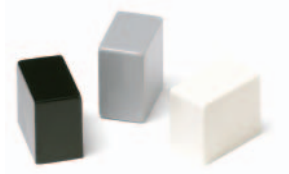
F02 FG



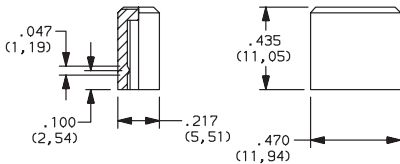
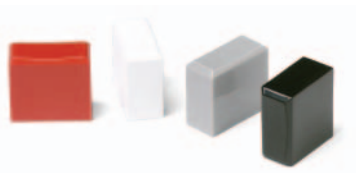
F12 FSC



F13 FSD



F14 FU12



| OPTION CODE | COLOR |
|-------------|----------|
| 01 | BLACK |
| 02 | WHITE |
| 03 | RED |
| 04 | LT. GRAY |



F Series Pushbutton Switches

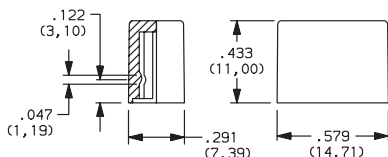
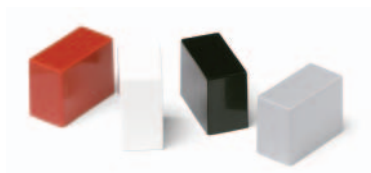
Pushbutton
A

SOLID BUTTON

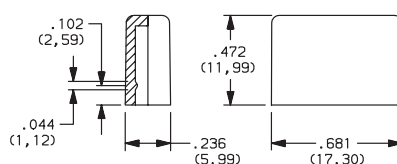


STYLE

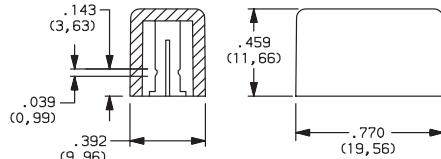
F15 FSB



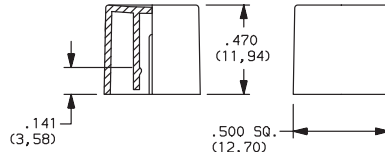
F16 FE



F19 FA



F21 F001



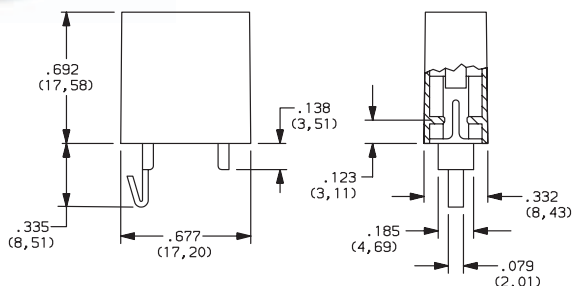
| OPTION CODE | COLOR |
|-------------|----------|
| 01 | BLACK |
| 02 | WHITE |
| 03 | RED |
| 04 | LT. GRAY |

MECHANICAL BUTTON

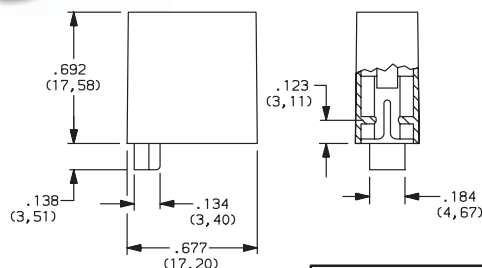


STYLE

F01 FA100



F02 FA101



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

F Series Pushbutton Switches



MECHANICAL BUTTON

SHELL COLOR

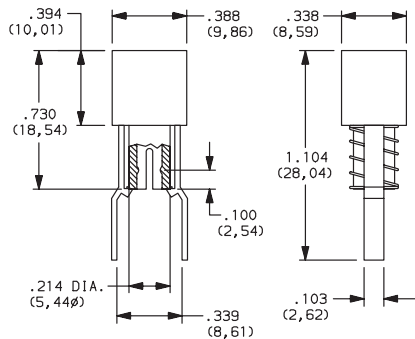
IN POSITION COLOR

STYLE

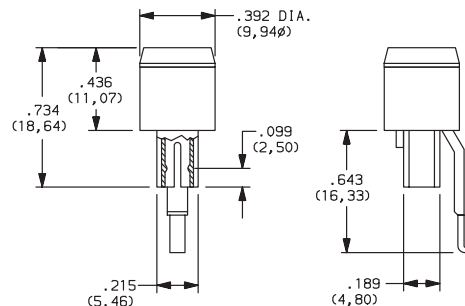
OUT POSITION COLOR

STYLE

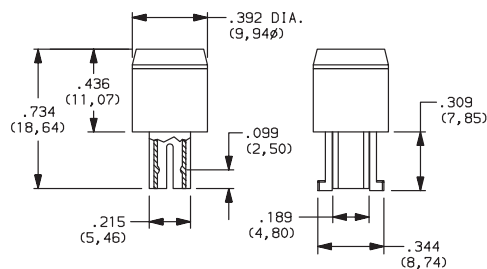
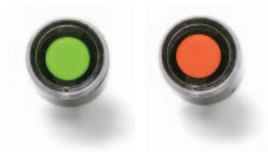
F07 FA120



F08 FA201



F11 FA200



SHELL COLOR

01 BLACK

OUT POSITION COLOR

01 BLACK

IN POSITION COLOR

| OPTION CODE | COLOR |
|-------------|--------|
| 02 | WHITE |
| 06 | YELLOW |
| 07 | BLUE |
| 08 | GREEN |
| 12 | ORANGE |

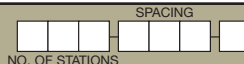


Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



F Series Pushbutton Switches

CHASSIS



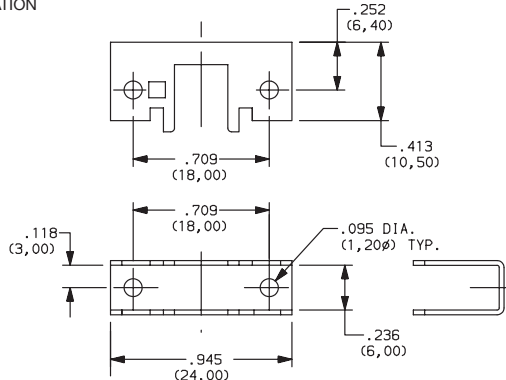
NUMBER OF STATIONS

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

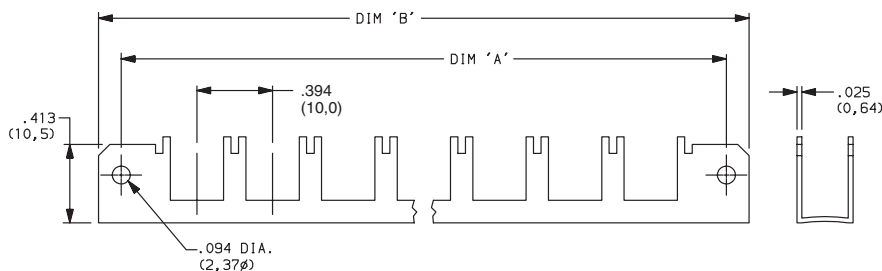
NOTE: Single station chassis available with mounting configurations, consult factory.

SPACING

00 SINGLE STATION

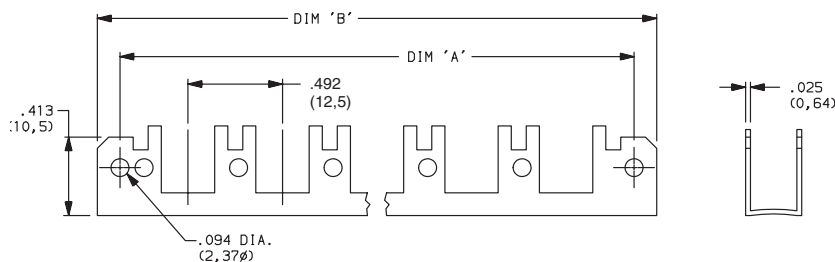


10 10mm



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

12.5 12.5mm



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



Third Angle
Projection

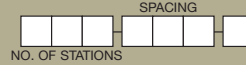
F Series Pushbutton Switches



A

Pushbutton

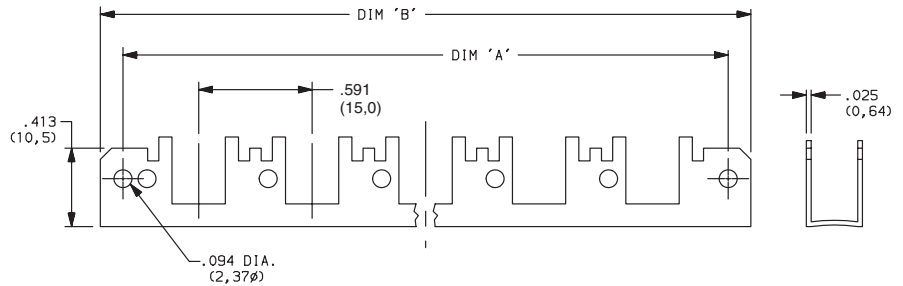
CHASSIS



SPACING

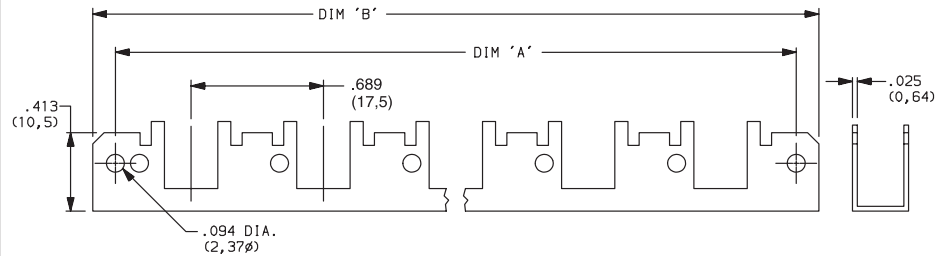
15 15mm

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



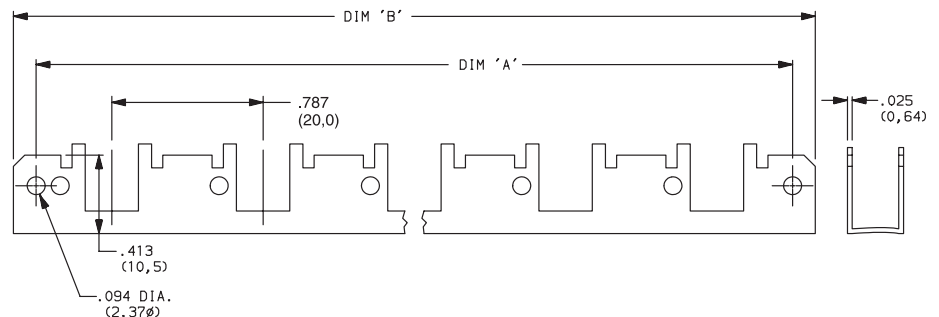
17.5 17.5mm

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



20 20mm

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



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



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