F Series
Pushbutton Switches

Littelfuse® | **C&K** Switches

Description

Innovative digital equipment and medical equipment interfaces utilize F series pushbutton switches because the variety of possible mounting and switch ganging configurations that can fit almost any design. F series switches are RoHS compliant, have various contact terminals and are engineered with up to 10 poles per module.

Features & Benefits

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

Applications

- Audio selection
- Digital equipment interface
- Medical equipment interface

Agency Approvals

Agency	Agency File Number
$_{c}$**RU**$_{us}$	E42363

Notes:
Only for contact arrangement 2U, 4U or 6U. Evaluated for 125Vac/0.4A. See UL Recognition for more details.

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 $\Delta u = 20°C$: Silver: < 2A, Gold: <0.5A.
Dielectric Strength	(50 Hz, 1 min.): Chassis/contact: ≥1500V Between contacts: ≥1500V.
Operating Life	"OA/EE" (24V/200mA): >10^5 operations "GR": >3.5 x 10^4 operations.
Contact Resistance	Initial: Typical ≤10 mΩ, max. 20 mΩ After operating life: ≤100 mΩ
Insulation Resistance	≥10^9 Ω between open contacts, ≥10^9 Ω between chassis and contacts.
Capacitance	(at f = 10 kHz): ≤ 0.7 pF between 2 contacts.
Total Travel/ Latching Travel	4.7mm/3.3mm (0.185 inch/0.130 inch). All models and options are RoHS compliant and compatible.
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 94 V-0 or polyester UL 94 V-0.
Actuator	Polyester UL 94 V-0.
Movable Contacts	Bimetal brass, silver plated, gold plate over nickel.
Stationary Contacts & Terminals	Brass, silver plated, gold plated.
Terminal Board	Polyester UL 94 V-0.
Return Spring	Music wire
Terminal Seal	RTV Adhesive sealant.
Chassis	Steel
Lockout Pin	
Blockers	

Notes:
All models and options are RoHS compliant and compatible. Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

F Series
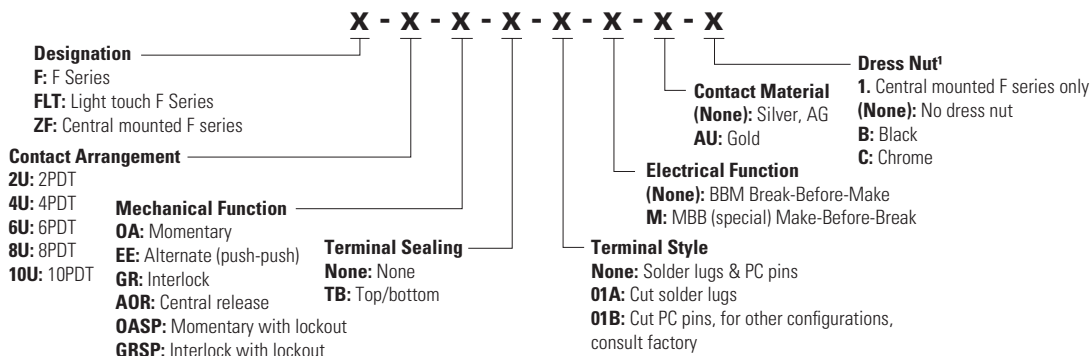## Pushbutton Switches

Littelfuse® | C&K Switches
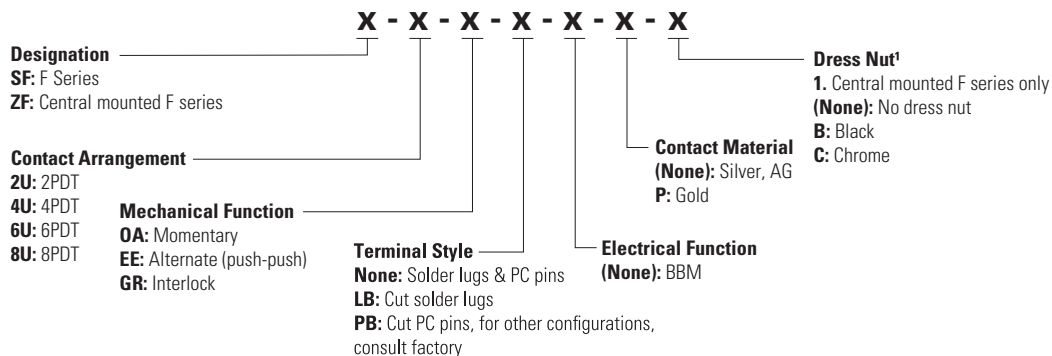
Ordering Number

To order, simply select desired option from each category and place in the appropriate box. 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.

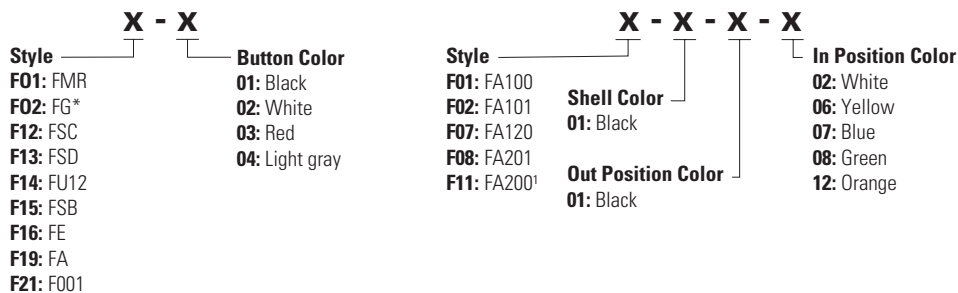### North American Order Code - Switch Only

X - X - X - X - X - X - X - X

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[1]
1. Central mounted F series only
(None): No dress nut
B: Black
C: Chrome

European Order Code - Switch Only

X - X - X - X - X - X - X

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[1]
1. Central mounted F series only
(None): No dress nut
B: Black
C: Chrome

Notes:
Minimum order quantities apply.

Order Code - Buttons

X - X

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

X - X - X - X

Style
F01: FA100
F02: FA101
F07: FA120
F08: FA201
F11: FA200[1]

Shell Color
01: Black

Out Position Color
01: Black

In Position Color
02: White
06: Yellow
07: Blue
08: Green
12: Orange

Notes:
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.

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

Cx - x - x

No. of Stations
01 thru 23: Comes with standard 0.094 (2,4mm) mounting holes. Single station chassis available with special mounting configurations, consult factory.

Special Acknowledgements:
See note

Spacing between Stations
00: Single station
10: 10mm
12.5: 12.5mm
15: 15mm
17.5: 17.5mm
20: 20mm

Notes:
Minimum order quantities apply.

Switches with Standard Buttons

F2UEE
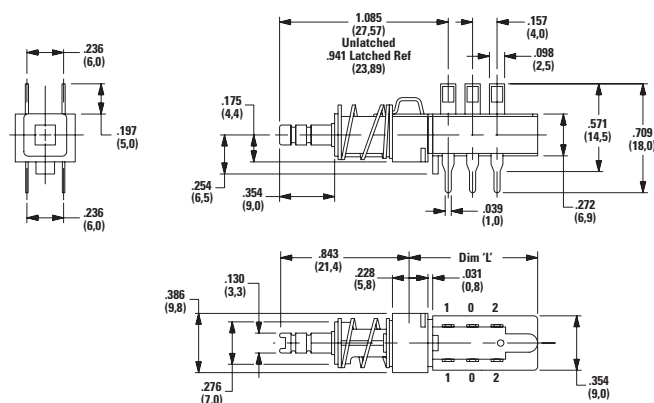
Contact Arrangement	Length DIM 'L'
2U	0.827 (21.00)
4U	1.300 (33.00)
6U	1.770 (45.00)
8U	2.240 (57.00)
10U	2.720 (69.00)

ZF2UEEBF11010108
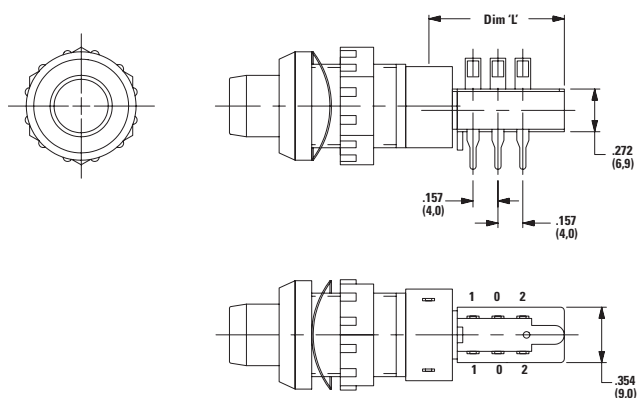
Contact Arrangement	Length DIM 'L'
2U	0.827 (21.00)
4U	1.300 (33.00)
6U	1.770 (45.00)
8U	2.240 (57.00)
10U	2.720 (69.00)

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

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Littelfuse® | **C&K** Switches

Contact Arrangement

Option Code	No. of Poles	Schematic
2U	2PDT	
4U	4PDT	2x
6U	6PDT	3x
8U	8PDT	4x
10U	10PDT	5x

PC Mounting
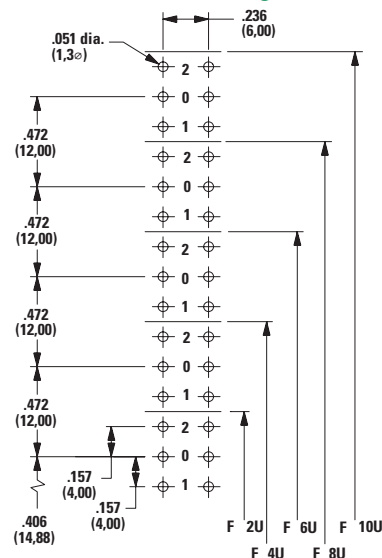
Mechanical Function

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
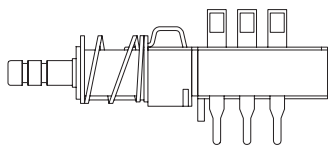
F2UEE shown in example above.

TB Top & Bottom

Sealing Top & Bottom
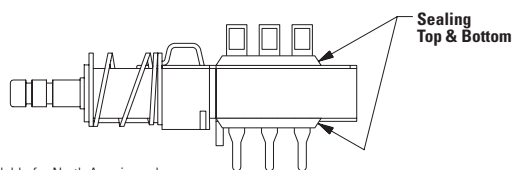
Note: Available for North America only

Terminal Style

(None) Solder Lugs & PC Pins
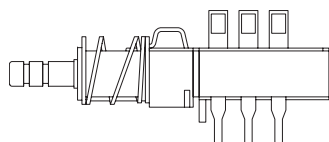
**01A Cut Solder Lugs (North America)
LB Cut Solder Lugs (Europe)**

.067 (1.70)
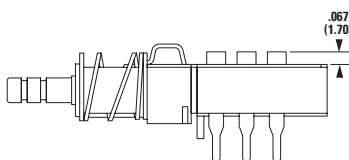
**01B Cut PC Pins (North America)
PB Cut PC Pins (Europe)**

.079 (2.01)

Littelfuse®
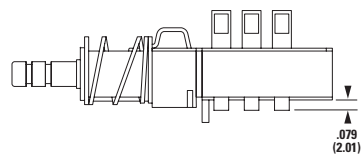
F Series
Pushbutton Switches

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[1]	RoHS Compatible[1]	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	1VA/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
Dimensions inches (mm)

(None) No Dress Nut for F & F/LT Designations

B Black

.098 (2,49)
⌀.689 (17,50)
⌀.415 (10,54)
M14 X 1 THD
.197 (5,00)

C Chrome

M12 X 0.75
Knurl
⌀.630 (16,00)
.098

Panel Cutout

.551 dia. (14,0⌀)
.035 (0,9)
.075 (1,9)
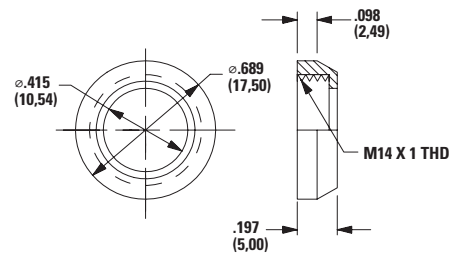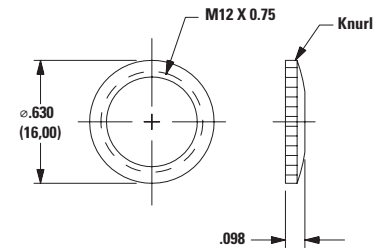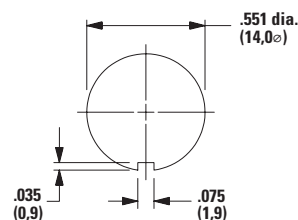
Note: Available with ZF designation and FA200 buttons.

Panel Cutout

.472 dia. (12,0⌀)
.020 (0,5)
.051 (1,3)
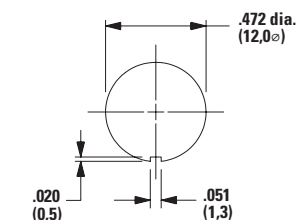
Note: Available with ZF designation and FG buttons.

Solid Button Style
Dimensions inches (mm)

F01 FMR
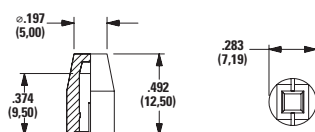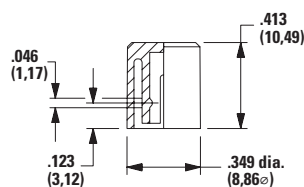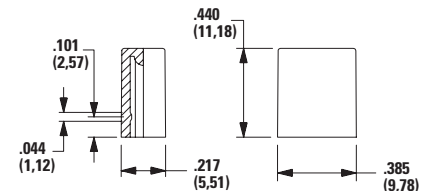
⌀.197 (5,00)
.283 (7,19)
.374 (9,50)
.492 (12,50)

F02 FG

.046 (1,17)
.413 (10,49)
.123 (3,12)
.349 dia. (8,86⌀)

F12 FSC

.440 (11,18)
.101 (2,57)
.044 (1,12)
.217 (5,51)
.385 (9,78)
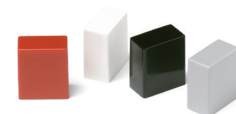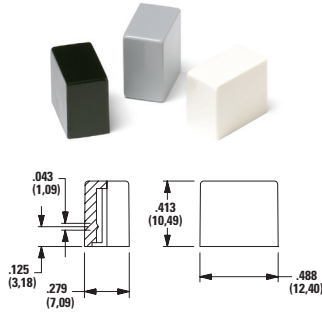
F Series
Pushbutton Switches

Dimensions inches (mm)

F13 FSD

.043
(1,09)

.413
(10,49)

.125
(3,18)

.279
(7,09)

.488
(12,40)

F14 FU12

.047
(1,19)

.435
(11,05)

.100
(2,54)

.217
(5,51)

.470
(11,94)

F15 FSB

.122
(3,10)

.433
(11,00)

.047
(1,19)

.291
(7,39)

.579
(14,71)

F16 FE

.102
(2,59)

.472
(11,99)

.044
(1,12)

.236
(5,99)

.681
(17,30)

F19 FA

.143
(3,63)

.459
(11,66)

.039
(0,99)

.392
(9,96)

.770
(19,56)

F21 F001

.470
(11,94)

.141
(3,58)

.500 sq.
(12,70)
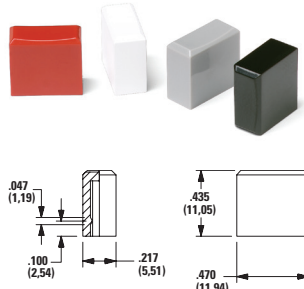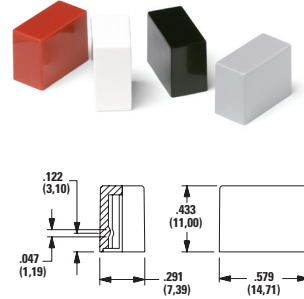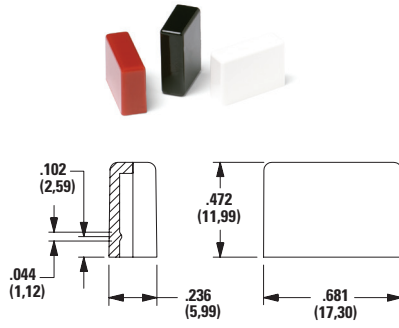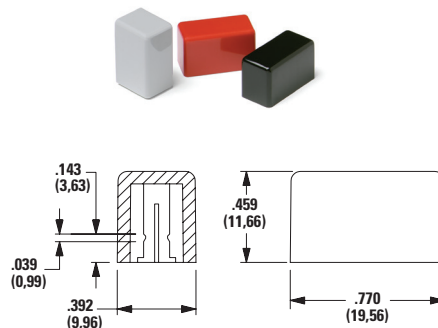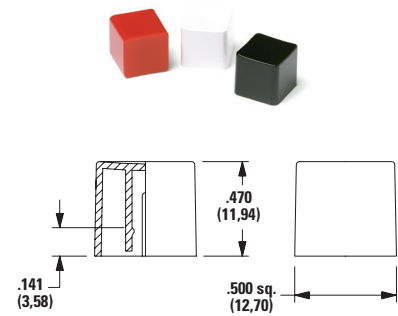
Option Code	Color
01	Black
02	White
03	Red
04	LT. Gray

**Mechanical Button
Style and Color
Dimensions inches (mm)**

F01 FA100

.692
(17,58)

.138
(3,51)

.123
(3,11)

.335
(8,51)

.677
(17,20)

.185
(4,69)

.332
(8,43)

.079
(2,01)

F02 FA101

.692
(17,58)

.123
(3,11)

.138
(3,51)

.134
(3,40)

.184
(4,67)

.677
(17,20)
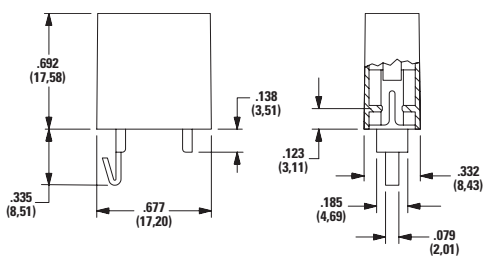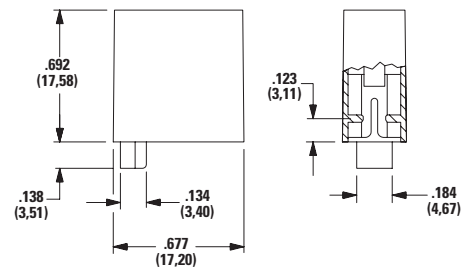
F Series
Pushbutton Switches

Dimensions inches (mm)

F07 FA120

.394 (10,01)
.388 (9,86)
.338 (8,59)
.730 (18,54)
1.104 (28,04)
.100 (2,54)
.214 dia. (5,44∅)
.339 (8,61)
.103 (2,62)

F08 FA201

.392 dia. (9,94∅)
.436 (11,07)
.734 (18,64)
.099 (2,50)
.643 (16,33)
.215 (5,46)
.189 (4,80)

F11 FA200

.392 dia. (9,94∅)
.436 (11,07)
.734 (18,64)
.099 (2,50)
.309 (7,85)
.215 (5,46)
.189 (4,80)
.344 (8,74)
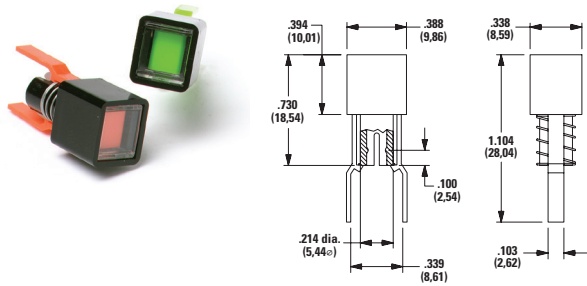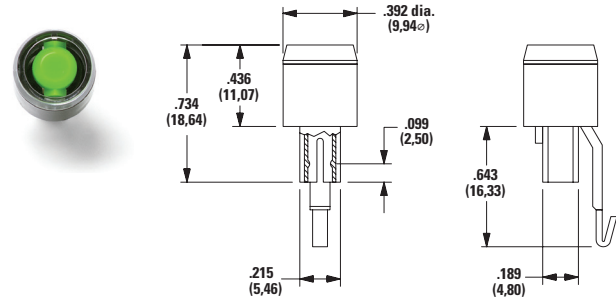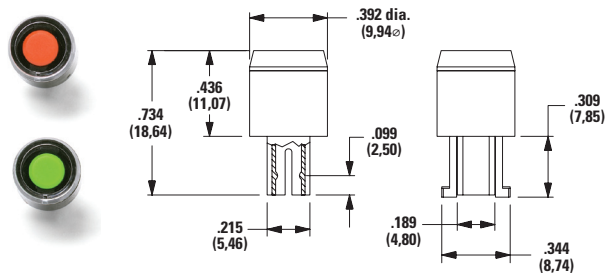
Shell Color 01 Black

Out Position Color 01 Black

In Position Color

Option Code	Color
02	White
06	Yellow
07	Blue
08	Green
12	Orange

Chassis

Number of Stations
C00 Thru C10

Notes: Comes with standard 0.094 (2.44mm) mounting, single station chassis available with mounting configurations, consult factory.

Spacing
### 00 Single Station
Dimensions inches (mm)

.252 (6,40)
.413 (10,50)
.709 (18,00)
.709 (18,00)
.118 (3,00)
.095 dia. (1,20∅) typ.
.236 (6,00)
.945 (24,00)
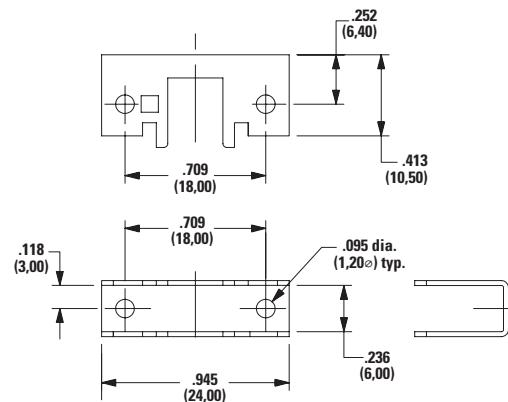
F Series
Pushbutton Switches

Dimensions inches (mm)

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
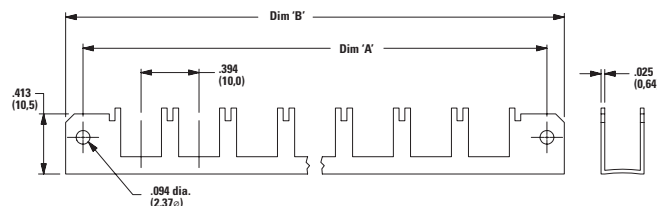
12.5 12.5mm

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
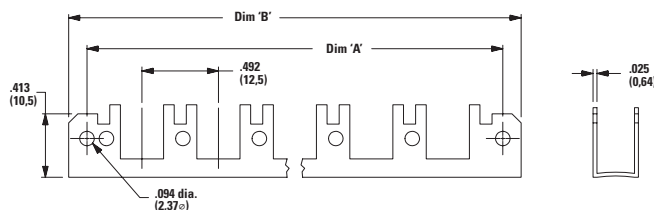
15 15mm

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
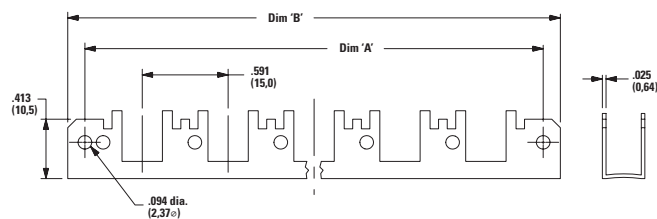
F Series
Pushbutton Switches

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
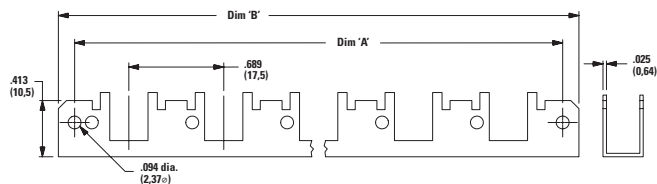
20 20mm

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