

# TM Series Miniature Snap-acting Switches



## Features/Benefits

- Broad range of operating forces available
- Wide variety of actuator and terminal styles
- Cost-effective solution

## Typical Applications

- Pumps and motors
- White goods
- Consumer appliances



## Specifications

CONTACT RATING: From low level\* to 15 AMPS @ 250 V AC.

ELECTRICAL LIFE: 150,000 cycles at 15 AMPS @ 250 V AC, models with 150 grams operating force. 350,000 cycles at 10 AMPS @ 250 V AC, models with 75 grams operating force.

INSULATION RESISTANCE: 1,000 M ohms min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -67°F to 302°F (-55°C to 150°C).

OPERATING FORCE: 50, 75 and 150 grams at actuator available; refer to chart for lever style forces.

MOUNTING: Torque screws 2-5 in/lbs.

\* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

## Materials

SWITCH HOUSING: Thermoplastic or general purpose phenolic (UL 94V-0).

ACTUATOR BUTTON: Thermoplastic (UL 94V-0).

SPRING: Copper alloy.

PIVOT: Brass alloy.

MOVABLE CONTACTS: Gold alloy for ratings 1 AMP @ 125 V AC or less. Fine silver for ratings greater than 1 AMP @ 125 V AC.

STATIONARY CONTACTS: Gold alloy for ratings 1 AMP or less. Fine silver for ratings greater than 1 AMP.

TERMINALS: Brass alloy for ratings up to 10 AMPS @ 250 V AC. Copper alloy for 15 AMPS @ 250 V AC ratings.

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

## 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 J-26 through J-31. For additional options not shown in catalog, consult Customer Service Center.

Available extended electrical life per UL 1054, rated for 100,000 operations, consult factory.

|                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
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|                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Series</b><br><b>TM</b> SP, Mom.                                                                                                                                                                                                                                                                                                          | <b>Mounting Style</b><br><b>S</b> Standard<br><b>V</b> Metric                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Operating Force</b><br><b>CG</b> 2.65 oz./75 grams<br><b>CJ</b> 5.29 oz./150 grams<br><b>CF</b> 1.76 oz./50 grams                                                                                                                                                                                                                         | <b>Actuator</b><br><b>P00</b> Pin plunger<br><b>A10</b> .81" lever roller, high force<br><b>A15</b> 1.34" lever roller, high force<br><b>A20</b> 1.02" lever roller, low force<br><b>A25</b> 1.56" lever roller, low force<br><b>T10</b> .84" lever, high force<br><b>T13</b> 1.34" simulated roller, high force<br><b>T14</b> 1.29" simulated roller, high force<br><b>T15</b> 1.40" lever, high force<br><b>T16</b> 2.34" lever, high force<br><b>T17</b> 2.00" lever, high force<br><b>T18</b> 2.75" lever, high force<br><b>T20</b> 1.06" lever, low force<br><b>T23</b> 1.56" simulated roller, low force<br><b>T24</b> 1.50" simulated roller, low force<br><b>T25</b> 1.62" lever, low force<br><b>T26</b> 2.56" lever, low force<br><b>T27</b> 2.22" lever, low force<br><b>T28</b> 2.97" lever, low force |
| <b>Electrical Rating</b><br><b>D6</b> 10 A @ 125 & 250 V AC; 1/3 HP @ 125 & 250 V AC; 1/2 A @ 125 V DC; 1/4 A @ 250 V DC<br><b>G6</b> 15 A @ 125 & 250 V AC; 1/4 A @ 250 V DC; 1/2 A @ 125 V DC; 1/2 HP @ 125 & 250 V AC; 3 A @ 125 V AC "L"<br><b>F5</b> 1 A @ 125 V AC; 1 A @ 30 V DC<br><b>H3</b> 5 A @ 250 V AC; 1/6 HP @ 125 & 250 V AC | <b>Terminations</b><br><b>40</b> .187" quick connect<br><b>10</b> Solder<br><b>4A</b> .250" quick connect<br><b>60</b> Screw                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Circuitry</b><br><b>C</b> SPDT<br><b>W</b> SPST N.C.<br><b>Y</b> SPST N.O.                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

\* All models



Dimensions are shown: Inch (mm)

Specifications and dimensions subject to change

**SERIES** 



| OPTION CODE | BASIC SWITCH<br>OPERATING FORCE<br>(OZ./GRAMS) |
|-------------|------------------------------------------------|
| <b>CG</b>   | 2.65<br>75                                     |
| <b>CJ</b>   | 5.29<br>150                                    |
| <b>CF</b>   | 1.76<br>50                                     |

**ELECTRICAL RATING** 

# TM Series Miniature Snap-acting Switches

## ELECTRICAL RATING

### AVAILABLE COMBINATIONS

| ELECTRICAL RATING | MAXIMUM OPERATING FORCE (OZ./GRAMS) |            |             |
|-------------------|-------------------------------------|------------|-------------|
|                   | 1.76/50 CF                          | 2.65/75 CG | 5.29/150 CJ |
| D6                | .                                   | .          | .           |
| F5                | .                                   | .          | .           |
| G6                | X                                   | X          | .           |
| H3                | .                                   | .          | .           |

• AVAILABLE  
X NOT AVAILABLE



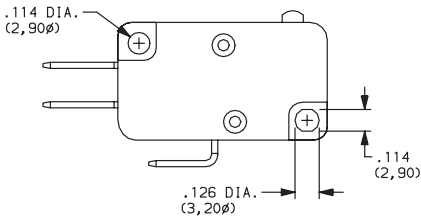
\* All models    
Contact Customer Service Center for availability and delivery of nonstandard ratings.

\* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

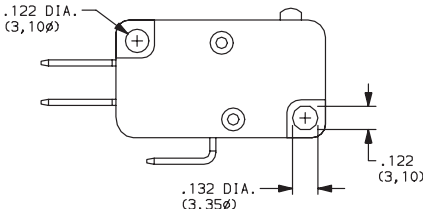
## MOUNTING STYLE

**S** Standard

**V** Metric



Recommended maximum screw size: 4-40.

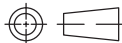


Recommended maximum screw size: 3 mm.

**NOTE:** Torque mounting screws 2-5 in/lbs.

Snap-acting





Third Angle  
Projection

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

# TM Series Miniature Snap-acting Switches

## ACTUATOR

| OPTION CODE | FIG. | DIM. A         | DIM. B        | DIM. C                        | DIM. D              |
|-------------|------|----------------|---------------|-------------------------------|---------------------|
| <b>P00</b>  | 2    | .80<br>(20,3)  | —             | .578 ± .015<br>(14,68 ± 0,38) | —                   |
| <b>A10</b>  | 1    | .81<br>(20,6)  | .36<br>(9,1)  | .810 ± .020<br>(20,57 ± 0,51) | .19 dia.<br>(4,80)  |
| <b>A15</b>  | 1    | 1.34<br>(34,0) | .36<br>(9,1)  | .810 ± .040<br>(20,57 ± 1,02) | .19 dia.<br>(4,80)  |
| <b>A20</b>  | 1    | 1.03<br>(26,2) | .58<br>(14,7) | .810 ± .050<br>(20,57 ± 1,27) | .19 dia.<br>(4,80)  |
| <b>A25</b>  | 1    | 1.56<br>(39,6) | .58<br>(14,7) | .810 ± .080<br>(20,57 ± 2,03) | .19 dia.<br>(4,80)  |
| <b>T10</b>  | 3    | .84<br>(21,3)  | .36<br>(9,1)  | .600 ± .020<br>(15,24 ± 0,51) | —                   |
| <b>T13</b>  | 4    | 1.34<br>(34,0) | .36<br>(9,1)  | .810 ± .040<br>(20,57 ± 1,02) | .19 dia.<br>(4,80)  |
| <b>T14</b>  | 4    | 1.28<br>(32,5) | .36<br>(9,1)  | .743 ± .050<br>(18,9 ± 1,3)   | .236 dia.<br>(6,00) |
| <b>T15</b>  | 3    | 1.40<br>(35,6) | .36<br>(9,1)  | .600 ± .040<br>(15,24 ± 1,02) | —                   |
| <b>T16</b>  | 3    | 2.34<br>(59,4) | .36<br>(9,1)  | .600 ± .062<br>(15,24 ± 1,57) | —                   |
| <b>T17</b>  | 3    | 2.00<br>(50,8) | .36<br>(9,1)  | .600 ± .052<br>(15,24 ± 1,33) | —                   |
| <b>T18</b>  | 3    | 2.75<br>(69,9) | .36<br>(9,1)  | .600 ± .093<br>(15,24 ± 2,36) | —                   |
| <b>T20</b>  | 3    | 1.06<br>(26,9) | .58<br>(14,7) | .600 ± .045<br>(15,24 ± 1,14) | —                   |
| <b>T23</b>  | 4    | 1.56<br>(39,6) | .58<br>(14,7) | .810 ± .065<br>(20,57 ± 1,65) | .19 dia.<br>(4,80)  |
| <b>T24</b>  | 4    | 1.50<br>(38,1) | .58<br>(14,7) | .743 ± .090<br>(18,80 ± 2,29) | .236 dia.<br>(6,00) |
| <b>T25</b>  | 3    | 1.62<br>(41,1) | .58<br>(14,7) | .600 ± .080<br>(15,24 ± 2,03) | —                   |
| <b>T26</b>  | 3    | 2.56<br>(65,0) | .56<br>(14,7) | .600 ± .125<br>(15,24 ± 3,18) | —                   |
| <b>T27</b>  | 3    | 2.22<br>(56,4) | .58<br>(14,7) | .600 ± .125<br>(15,24 ± 3,18) | —                   |
| <b>T28</b>  | 3    | 2.97<br>(75,4) | .58<br>(14,7) | .600 ± .187<br>(15,24 ± 4,75) | —                   |

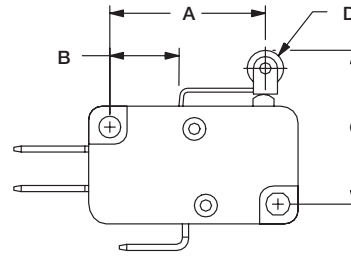


FIG. 1  
Lever Roller

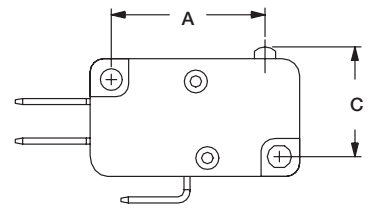


FIG. 2  
Pin Roller

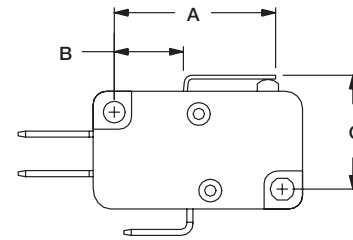


FIG. 3  
Lever

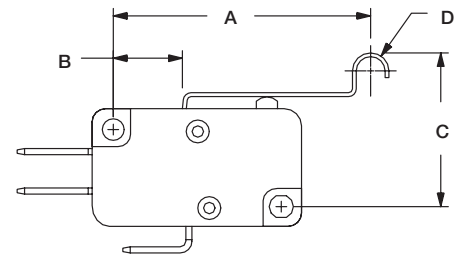
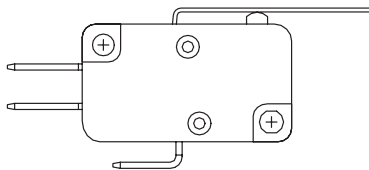


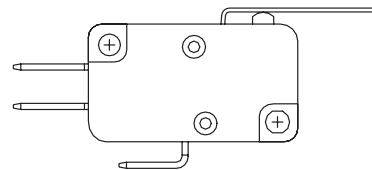
FIG. 4  
Simulated Roller

### HIGH FORCE, LOW MOTION PIVOT POSITION



Available with actuators A10, A15, T10, T13, T14, T15, T16, T17 and T18.

### LOW FORCE, HIGH MOTION PIVOT POSITION



Available with actuators A20, A25, T20, T23, T24, T25, T26, T27 and T28.

**NOTE:** Lever actuator options are available in either of two pivot positions. Levers located in the forward pivot position have lower forces and higher motions. Levers located in the rear pivot position have higher forces and lower motions.

# TM Series Miniature Snap-acting Switches

ACTUATOR 

## SWITCH CHARACTERISTICS

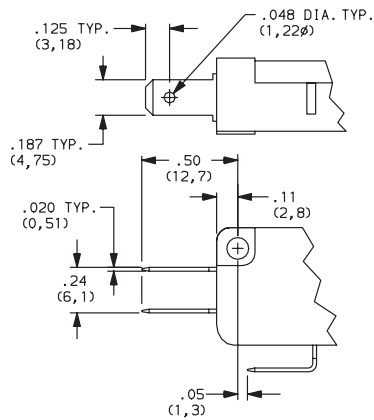
| OPTION CODE | MAXIMUM OPERATING FORCE (OZ./GRAMS) |            |             | MINIMUM RELEASE FORCE (OZ./GRAMS) |           |            | MINIMUM RETURN FORCE (OZ./GRAMS) |           |            | MAXIMUM DIFFERENTIAL TRAVEL | MAXIMUM PRETRAVEL | MINIMUM OVERTRAVEL |
|-------------|-------------------------------------|------------|-------------|-----------------------------------|-----------|------------|----------------------------------|-----------|------------|-----------------------------|-------------------|--------------------|
|             | CF (50)                             | CG (75)    | CJ (150)    | CF (50)                           | CG (75)   | CJ (150)   | CF (50)                          | CG (75)   | CJ (150)   | ALL FORCES                  | ALL FORCES        | ALL FORCES         |
| T10         | 2.12<br>60                          | 3.17<br>90 | 6.35<br>180 | .49<br>14                         | .99<br>28 | 1.69<br>48 | .25<br>7                         | .53<br>15 | 1.06<br>30 | .013<br>(0,33)              | .080<br>(2,03)    | .035<br>(0,89)     |
| T13         | 1.06<br>30                          | 1.59<br>45 | 2.82<br>80  | .21<br>6                          | .35<br>10 | .71<br>20  | .11<br>3                         | .14<br>4  | .35<br>10  | .030<br>(0,76)              | .160<br>(4,06)    | .065<br>(1,65)     |
| T13         | 1.06<br>30                          | 1.76<br>50 | 3.17<br>90  | .25<br>7                          | .35<br>10 | .71<br>20  | .11<br>3                         | .14<br>4  | .35<br>10  | .050<br>(1,27)              | .140<br>(3,56)    | .062<br>(1,57)     |
| T15         | 1.06<br>30                          | 1.59<br>45 | 2.28<br>80  | .21<br>6                          | .32<br>9  | .71<br>20  | .11<br>3                         | .14<br>4  | .35<br>10  | .032<br>(0,81)              | .160<br>(4,06)    | .075<br>(1,90)     |
| T16         | .53<br>15                           | .71<br>20  | 1.41<br>40  | .11<br>3                          | .18<br>5  | .35<br>10  | .05<br>1.5                       | .07<br>2  | .18<br>5   | .090<br>(2,29)              | .312<br>(7,92)    | .140<br>(3,56)     |
| T17         | .71<br>20                           | .88<br>25  | 1.76<br>50  | .14<br>4                          | .21<br>6  | .42<br>12  | .07<br>2                         | .07<br>2  | .21<br>6   | .062<br>(1,57)              | .220<br>(5,59)    | .110<br>(2,79)     |
| T18         | N/A                                 | .71<br>20  | 1.23<br>35  | N/A                               | .14<br>4  | .28<br>8   | N/A                              | .04<br>1  | .14<br>4   | .078<br>(1,98)              | .375<br>(9,52)    | .160<br>(4,06)     |
| T20         | 1.06<br>30                          | 1.59<br>45 | 3.17<br>90  | .21<br>6                          | .32<br>9  | .71<br>20  | .11<br>3                         | .18<br>5  | .35<br>10  | .030<br>(0,76)              | .160<br>(4,06)    | .065<br>(1,65)     |
| T23         | .53<br>15                           | 1.06<br>30 | 1.59<br>45  | .11<br>3                          | .18<br>5  | .35<br>10  | .04<br>1                         | .07<br>2  | .18<br>5   | .070<br>(1,78)              | .312<br>(7,92)    | .125<br>(3,18)     |
| T24         | .53<br>15                           | 1.23<br>35 | 1.76<br>50  | .11<br>3                          | .18<br>5  | .35<br>10  | .05<br>1.5                       | .07<br>2  | .18<br>5   | .080<br>(2,03)              | .312<br>(7,92)    | .110<br>(2,79)     |
| T25         | .71<br>20                           | 1.06<br>30 | 1.41<br>40  | .07<br>2                          | .14<br>4  | .32<br>9   | .04<br>1                         | .07<br>2  | .16<br>4.5 | .070<br>(1,78)              | .330<br>(8,38)    | .100<br>(2,54)     |
| T26         | N/A                                 | .35<br>10  | .71<br>20   | N/A                               | .07<br>2  | .18<br>5   | N/A                              | .04<br>1  | .07<br>2   | .110<br>(2,79)              | .500<br>(12,7)    | .250<br>(6,35)     |
| T27         | N/A                                 | .60<br>17  | .88<br>25   | N/A                               | .11<br>3  | .21<br>6   | N/A                              | .04<br>1  | .11<br>3   | .125<br>(3,18)              | .500<br>(12,70)   | .200<br>(5,08)     |
| T28         | N/A                                 | .42<br>12  | .63<br>18   | N/A                               | .07<br>2  | .14<br>4   | N/A                              | .04<br>1  | .07<br>2   | .187<br>(4,75)              | .750<br>(19,05)   | .280<br>(7,11)     |
| A10         | 2.12<br>60                          | 3.17<br>90 | 6.35<br>180 | .49<br>14                         | .99<br>28 | 1.69<br>48 | .25<br>7                         | .53<br>15 | 1.06<br>30 | .013<br>(0,33)              | .070<br>(1,78)    | .035<br>(0,89)     |
| A15         | 1.06<br>30                          | 1.59<br>45 | 2.82<br>80  | .21<br>6                          | .35<br>10 | .71<br>20  | .11<br>3                         | .14<br>4  | .35<br>10  | .030<br>(0,76)              | .160<br>(4,06)    | .065<br>(1,65)     |
| A20         | 1.06<br>30                          | 1.76<br>50 | 3.17<br>90  | .25<br>7                          | .35<br>10 | .71<br>20  | .11<br>3                         | .18<br>5  | .35<br>10  | .025<br>(0,64)              | .140<br>(3,56)    | .060<br>(1,52)     |
| A25         | .53<br>15                           | 1.06<br>30 | 1.59<br>45  | .11<br>3                          | .18<br>5  | .35<br>10  | .04<br>1                         | .07<br>2  | .18<br>5   | .070<br>(1,78)              | .312<br>(7,92)    | .125<br>(3,18)     |
| P00         | 1.76<br>50                          | 2.65<br>75 | 5.29<br>150 | .71<br>20                         | .99<br>28 | 2.12<br>60 | .35<br>10                        | .53<br>15 | 1.06<br>30 | .013<br>(0,33)              | .056<br>(1,42)    | .035<br>(0,89)     |

NOTE: For basic switch operating forces, see page J-26.

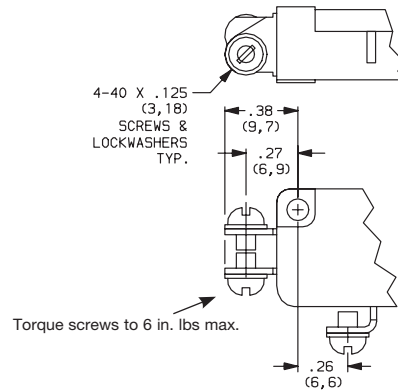
# TM Series Miniature Snap-acting Switches

## TERMINATIONS

### 40 .187" QUICK CONNECT

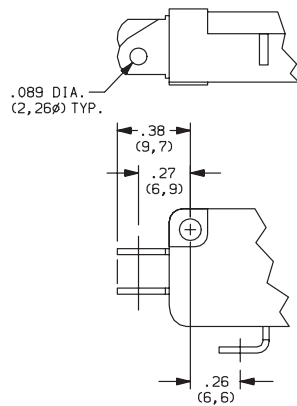


### 60 SCREW TERMINALS



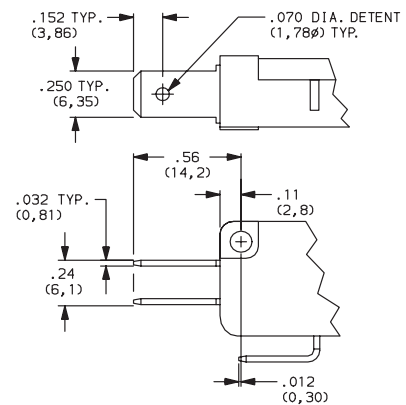
Not available with 'F5' rating option.

### 10 SOLDER



Not available with 'F5' rating option.

### 4A .250" QUICK CONNECT



Not available with 'F5' rating option.

Snap-acting

## CIRCUITRY

- C** SPDT (Single Pole, Double Throw)
- W** SPST N.C. (Single Pole, Single Throw, Normally Closed)
- Y** SPST N.O. (Single Pole, Single Throw, Normally Open)



Third Angle Projection

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