

TM Series

Mid Size Snap-acting Switches



Agency Approvals

Agency	Agency File Number
cUL US	E42363

Specifications

Contact Rating	From low level ¹ 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 ohm min.
Dielectric Strength	1,000 Vrms min. @ sea level
Operating Temperature	-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

Notes:

1. Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max. Standard electrical life per UL 1054, rated for 6,000 operations.

Description

The TM series mid size snap-acting switch is used in a variety of pumps and motors, consumer appliances and other white goods. The TM series gives designers a broad range of operating forces and a wide variety of actuator and terminal styles - making it a cost-effective solution for any innovative application.

Features & Benefits

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

Applications

- Pumps and motors
- Consumer appliances
- White goods

Materials

Switch Housing	Thermoplastic or general purpose phenolic (UL 94 V-0)
Actuator Button	Thermoplastic (UL 94 V-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.

Notes:

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

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Ordering Number

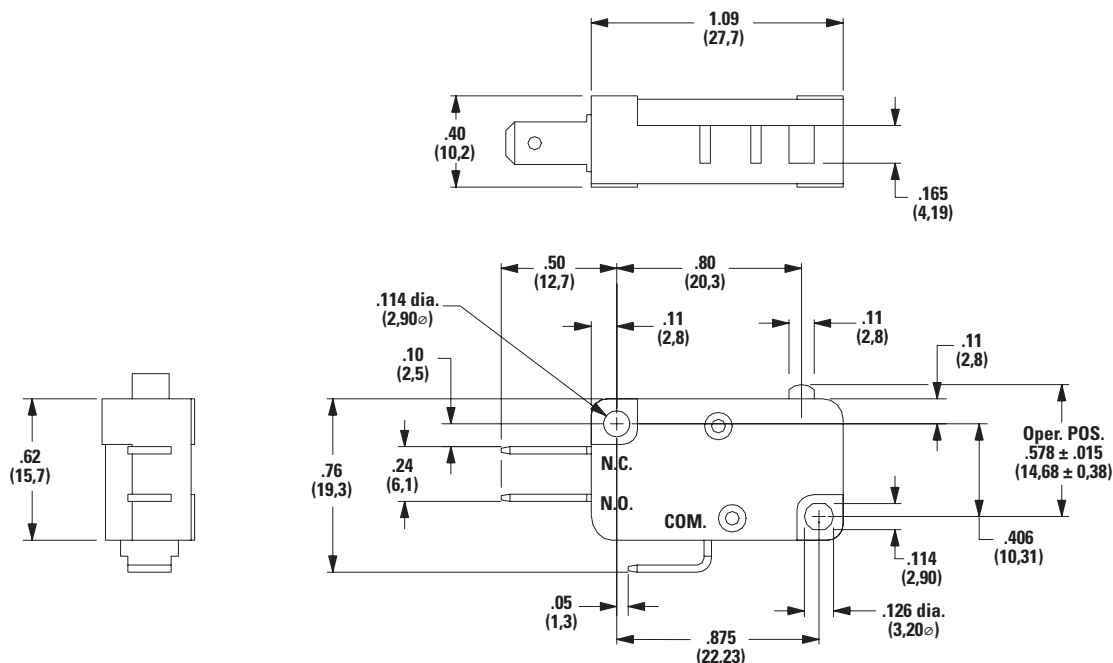
To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult Customer Service Center. Available extended electrical life per UL 1054, rated for 100,000 operations, consult factory.

TM - XX - XX - X - XXX - XX - X					
Series TM: SP, Mom.					Circuitry: C: SPDT W: SPST N.C. Y: SPST N.O.
Operating Force CG: 2.65 oz./75 grams CJ: 5.29 oz./150 grams CF: 1.76 oz./50 grams	Electrical Rating D6: 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 G6: 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" F5: 1 A @ 125 V AC; 1 A @ 30 V DC H3: 5 A @ 250 V AC; 1/6 HP @ 125 & 250 V AC	Mounting Style S: Standard V: Metric	Actuator P00: Pin plunger A10: 0.81" lever roller, high force A15: 1.34" lever roller, high force A20: 1.05" lever roller, low force A25: 1.56" lever roller, low force T10: 0.84" lever, high force T13: 1.34" simulated roller, high force T14: 1.29" simulated roller, high force T15: 1.40" lever, high force T16: 2.34" lever, high force T18: 2.75" lever, high force T20: 1.10" lever, low force T23: 1.56" simulated roller, low force T24: 1.50" simulated roller, low force T25: 1.62" lever, low force T26: 2.57" lever, low force T27: 2.22" lever, low force T28: 2.97" lever, low force	Terminations 40: 0.187" quick connect 10: Solder 4A: 0.250" quick connect 60: Screw	

Notes: All models us

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Mid Size Snap-Acting Switches - SP Momentary



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Operating Force

Option Code	Basic Switch Operating Force (oz./grams)
CF	1.76 / 50
CG	2.65 / 75
CJ	5.29 / 150

Notes:

Operating Force option 'CF' not available with 'T18, T27 and T28' actuator options. Operating force varies with actuator option, see actuator option section.

Electrical Rating

Option Code	RoHS Compliant ¹	RoHS Compatible ¹	Contact Material		Electrical Rating cULus
			Movable Contact	Stationary Contact	
D6	Yes		Fine Silver	Fine Silver	10 AMPS @ 125 & 250 V AC; 1/3 HP @ 125 & 250 V AC; 1/2 AMP @ 125 V DC; 1/4 AMP @ 250 V DC.
F5	Yes		Gold alloy	Gold alloy	From low level ¹ to 1 AMP @ 125 V AC, 1 AMP @ 30 V DC.
G6	Yes		Fine Silver	Fine Silver	15 AMPS @ 125 & 250 V AC; 0.25 AMP @ 250 V DC; 0.5 AMP @ 125 V DC; 1/2 HP @ 125 & 250 V AC; 3 AMPS @ 125 V AC "L".
H3	Yes		Fine Silver	Fine Silver	5 AMPS @ 250 V AC; 1/6 HP @ 125 & 250 V AC.

Notes: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications. All models cULus Consult Customer Service center for availability and delivery of nonstandard ratings.

¹ Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

Available Combinations

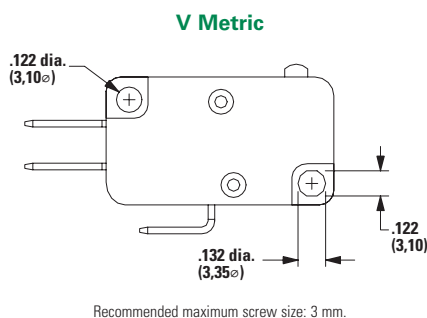
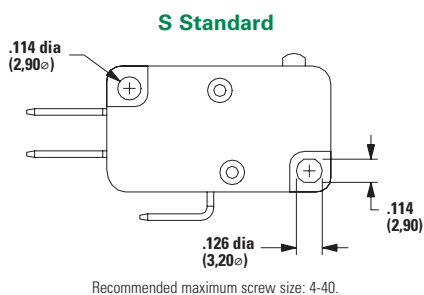
Electrical Rating	Max. Operating Force (oz./grams)		
	1.76/50 CF	2.65/75 CG	5.29/150 CJ
D6	•	•	•
F5	•	•	•
G6	X	X	•
H3	•	•	•

Notes: • Available, X Not available, All models cULus

Consult Customer Service center for availability and delivery of nonstandard ratings.

¹ Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

Mounting Style inches (mm)


Notes:

Torque mounting screws 2-5 in/lbs.

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Actuator

Option Code	Fig.	Dim. A	Dim. B	Dim. C	Dim. D
P00	2	0.80 (20.3)	-	0.578 ± 0.015 (14.68 $\pm$ 0.38)	-
A10	1	0.81 (20.6)	0.36 (9.1)	0.810 ± 0.020 (20.57 $\pm$ 0.51)	0.19 dia. (4.8Ø)
A15	1	1.34 (34.0)	0.36 (9.1)	0.810 ± 0.040 (20.57 $\pm$ 1.02)	0.19 dia. (4.8Ø)
A20	1	1.03 (26.2)	0.58 (14.7)	0.810 ± 0.050 (20.57 $\pm$ 1.27)	0.19 dia. (4.8Ø)
A25	1	1.56 (39.6)	0.58 (14.7)	0.810 ± 0.080 (20.57 $\pm$ 2.03)	0.19 dia. (4.8Ø)
T10	3	0.84 (21.3)	0.36 (9.1)	0.600 ± 0.020 (15.24 $\pm$ 0.51)	-
T13	4	1.34 (34.0)	0.36 (9.1)	0.810 ± 0.040 (20.57 $\pm$ 1.02)	0.19 dia. (4.8Ø)
T14	4	1.28 (32.5)	0.36 (9.1)	0.743 ± 0.050 (18.9 $\pm$ 1.3)	0.236 dia. (6.0Ø)
T15	3	1.40 (35.6)	0.36 (9.1)	0.600 ± 0.040 (15.24 $\pm$ 1.02)	-
T16	3	2.34 (59.4)	0.36 (9.1)	0.600 ± 0.062 (15.24 $\pm$ 1.57)	-
T17	3	2.00 (50.8)	0.36 (9.1)	0.600 ± 0.052 (15.24 $\pm$ 1.57)	-
T18	3	2.75 (69.9)	0.36 (9.1)	0.600 ± 0.093 (15.24 $\pm$ 2.36)	-
T20	3	1.06 (26.9)	0.58 (14.7)	0.600 ± 0.045 (15.24 $\pm$ 1.14)	-
T23	4	1.56 (39.6)	0.58 (14.7)	0.810 ± 0.065 (20.57 $\pm$ 1.65)	0.19 dia. (4.8Ø)
T24	4	1.50 (38.1)	0.58 (14.7)	0.743 ± 0.090 (18.80 $\pm$ 2.29)	0.236 dia. (6.0Ø)
T25	3	1.62 (41.1)	0.58 (14.7)	0.600 ± 0.080 (15.24 $\pm$ 2.03)	-
T26	3	2.56 (65.0)	0.58 (14.7)	0.600 ± 0.125 (15.24 $\pm$ 3.18)	-
T27	3	2.22 (56.4)	0.58 (14.7)	0.600 ± 0.125 (15.24 $\pm$ 3.18)	-
T28	3	2.97 (75.4)	0.58 (14.7)	0.600 ± 0.187 (15.24 $\pm$ 4.75)	-

Note: Switch characteristics chart on following page.

Figure 1, Lever Roller

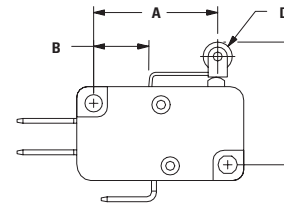


Figure 2, Pin Roller

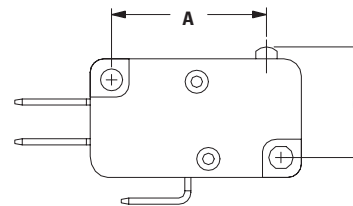


Figure 3, Lever

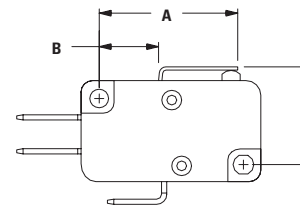
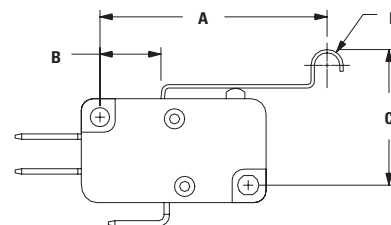
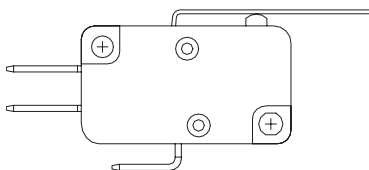


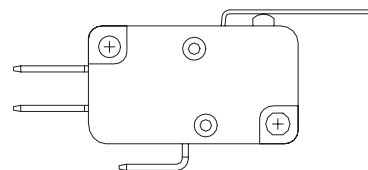
Figure 4, Simulated Roller



High Force, Low Motion Pivot Position



Low Force, High Motion Pivot Position



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

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.

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Switch Characteristics

Option Code	Max. Operating Force (oz./grams)			Min. Release Force (oz./grams)			Min Return Force (oz./grams)			Max. Differential Travel	Max. Pre-Travel	Min. Over Travel
	CF (50)	CG (75)	CJ (150)	CF (50)	CG (75)	CJ (150)	CF (50)	CG (75)	CJ (150)	All Forces		
T10	2.12 60	3.17 90	6.35 180	0.49 14	0.99 28	1.69 48	0.25 7	0.53 15	1.06 30	0.013 (0.33)	0.080 (2.03)	0.035 (0.89)
T13	1.06 30	1.59 45	2.82 80	0.21 6	0.35 10	0.71 20	0.11 3	0.14 4	0.35 10	0.030 (0.76)	0.160 (4.06)	0.065 (1.65)
T13	1.06 30	1.76 50	3.17 90	0.25 7	0.35 10	0.71 20	0.11 3	0.14 4	0.35 10	0.050 (1.27)	0.140 (3.56)	0.062 (1.57)
T15	1.06 30	1.59 45	2.28 80	0.21 6	0.32 9	0.71 20	0.11 3	0.14 4	0.35 10	0.032 (0.81)	0.160 (4.06)	0.075 (1.90)
T16	0.53 15	0.71 20	1.41 40	0.11 3	0.18 5	0.35 10	0.05 1.5	0.07 2	0.18 5	0.090 (2.29)	0.312 (7.92)	0.140 (3.56)
T17	0.71 20	0.88 25	1.76 50	0.14 4	0.21 6	0.42 12	0.07 2	0.07 2	0.21 6	0.062 (1.57)	0.220 (5.59)	0.110 (2.79)
T18	-	0.71 20	1.23 35	-	0.14 4	0.28 8	-	0.04 1	0.14 4	0.078 (1.98)	0.375 (9.52)	0.160 (4.06)
T20	1.06 30	1.59 45	3.17 90	0.21 6	0.32 9	0.71 20	0.11 3	0.18 5	0.35 10	0.030 (0.76)	0.160 (4.06)	0.065 (1.65)
T23	0.53 15	1.06 30	1.59 45	0.11 3	0.18 5	0.35 10	0.04 1	0.07 2	0.18 5	0.070 (1.78)	0.312 (7.92)	0.125 (3.18)
T24	0.53 15	1.23 35	1.76 50	0.11 3	0.18 5	0.35 10	0.05 1.5	0.07 2	0.18 5	0.080 (2.03)	0.312 (7.92)	0.110 (2.79)
T25	0.71 20	1.06 30	1.41 40	0.07 2	0.14 4	0.32 9	0.04 1	0.07 2	0.16 4.5	0.070 (1.78)	0.330 (8.38)	0.100 (2.54)
T26	-	0.35 10	0.71 20	-	0.07 2	0.18 5	-	0.04 1	0.07 2	0.110 (2.79)	0.500 (12.7)	0.250 (6.35)
T27	-	0.60 17	0.88 25	-	0.11 3	0.21 6	-	0.04 1	0.11 3	0.125 (3.18)	0.500 (12.70)	0.200 (5.08)
T28	-	0.42 12	0.63 18	-	0.07 2	0.14 4	-	0.04 1	0.07 2	0.187 (4.75)	0.750 (19.05)	0.280 (7.11)
A10	2.12 60	3.17 90	6.35 180	0.49 14	0.99 28	1.69 48	0.25 7	0.53 15	1.06 30	0.013 (0.33)	0.070 (1.78)	0.035 (0.89)
A15	1.06 30	1.59 45	2.82 80	0.21 6	0.35 10	0.71 20	0.11 3	0.14 4	0.35 10	0.030 (0.76)	0.160 (4.06)	0.065 (1.65)
A20	1.06 30	1.76 50	3.17 90	0.25 7	0.35 10	0.71 20	0.11 3	0.18 5	0.35 10	0.025 (0.64)	0.140 (3.56)	0.060 (1.52)
A25	0.53 15	1.06 30	1.59 45	0.11 3	0.18 5	0.35 10	0.04 1	0.07 2	0.18 5	0.070 (1.78)	0.312 (7.92)	0.125 (3.18)
P00	1.76 50	2.65 75	5.29 150	0.71 20	0.99 28	2.12 60	0.35 10	0.53 15	1.06 30	0.013 (0.33)	0.056 (1.42)	0.035 (0.89)

Note: For basic switch operating forces, see page 1

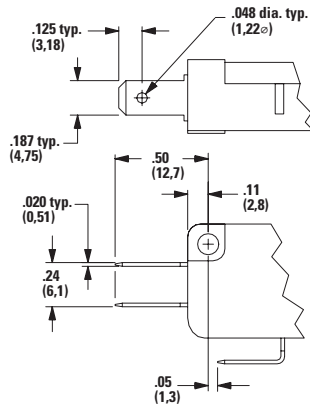
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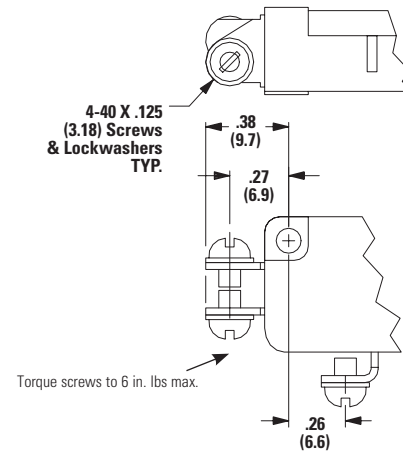


Terminations inches (mm)

40 0.187" Quick Connect

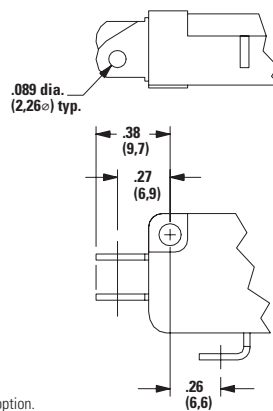


60 Screw Terminals



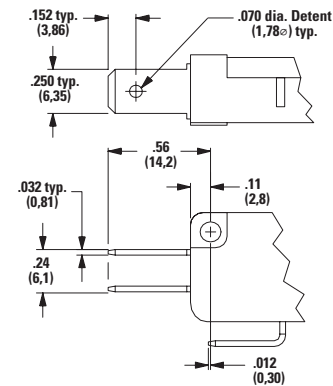
Not available with 'F5' rating option.

10 Solder



Not available with 'F5' rating option.

4A 0.250" Quick Connect



Not available with 'F5' rating option.

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)

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