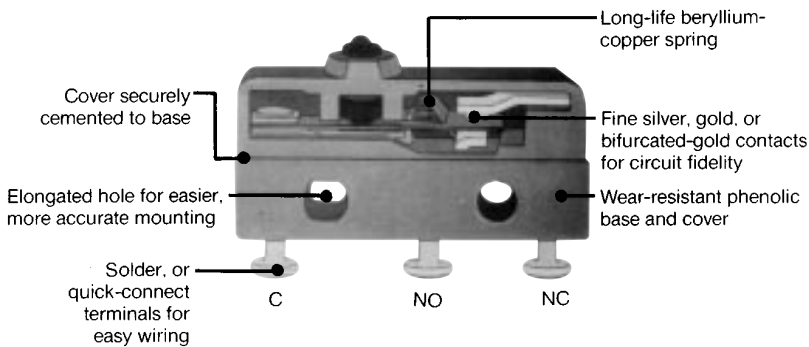


Basic Switches

Subminiature

SM Series

CUT-A-WAY SM SUBMINIATURE BASIC SWITCH



FEATURES

- Low operating force to 2 ounces maximum
- Sensitive differential travel as low as .001 inch (0,025 mm) maximum
- Power load switching capability available to 11 amps (VAC) – silver contacts
- Motor load handling capacity to 1/4 hp (VAC)
- Optional gold contacts for low energy applications
- Optional bifurcated gold contacts for maximum reliability
- Long mechanical life
 - 11SM Series 10,000,000 operations
 - 1SM/41SM Series 80,000 operations
 - Bifurcated contacts 1,000,000 operations
- All at 95% survival
- Standard temperature range –65° to +185°F (–54 to 85°C)
- High temperature construction available for use to +400°F (204°C) for 100 hours
- Variety of integral and auxiliary actuators
- Choice of several terminal styles
- Military Standard construction available with three listings on the MIL-S-8805 qualified products list
- UL recognized File #E12252, CSA certified File #LR41372

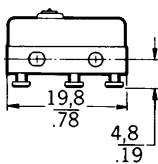
AVAILABLE TERMINALS

Various terminals are available for most listings. These include: the T and T2 for wrap-around soldering of leadwires; solder terminals for solder connections; H58 terminals and H4 series terminals provide easy quick-connect installation; H2 type, round wire wrap or PC terminals; H6 rectangular wire wrap terminals are also available. Other quick-connect terminals of the Series H types are available. Contact the 800 number for ordering information.

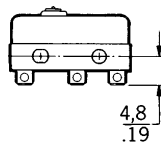
GENERAL INFORMATION

SM subminiature switches are slightly larger than the SX switches. These switches combine small size and light weight with ample electrical capacity, precision operation and long life. Unless otherwise noted, all listings have silver contacts.

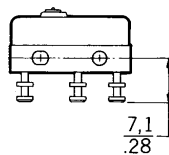
T



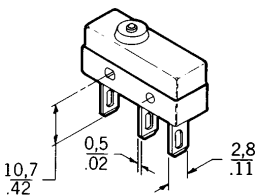
SOLDER



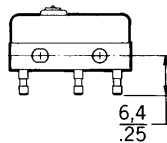
T2



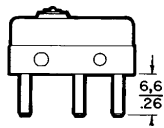
H4



H58



H2



Mates with Amp Inc. Part No. 640024-1 Std.

Dimensions shown are for reference only

Key: $\frac{0,0}{0.00} = \frac{\text{mm}}{\text{inches}}$

Mounting Torque:
2.3 inch pounds max.

This section covers only **38** of our most popular SM Series catalog listings. If you don't find what you're looking for, it's likely one of the approximately **500** other active SM listings will meet your needs. Contact the 800 number.

Basic Switches

Subminiature

SM Series

Characteristics: O.F. — Operating Force; R.F. — Release Force; P.T. — Pretravel; O.T. — Overtravel; D.T. — Differential Travel; O.P. — Operating Position.

ORDER GUIDE by ascending electrical capability

PIN PLUNGERS



Dim. Dwg. Fig. 1

Catalog Listing	Recommended For	Electrical Data And UL Code Page 20	O.F. newtons ounces	R.F. min. newtons ounces	P.T. max. mm inches	O.T. min. mm inches	D.T. max. mm inches	O.P.* mm inches
11SM1077-T	Gold alloy contacts	.1 Amp P	0,83-1,39 3-5	0,28 1	0,51 .020	0,13 .005	0,1 .004	8,38 .330
12SM604-T	Bifurcated gold contacts, reduced rating	.1 Amp P	0,83-1,39 3-5	0,28 1	0,51 .020	0,076 .003	0,1 .004	8,38 .330
11SM23-T	Application requiring gold contacts	1 Amp N	0,83-1,39 3-5	0,28 1	0,51 .020	0,13 .005	0,1 .004	8,38 .330
12SM4-T	Best reliability (Bifurcated gold contacts)	1 Amp N	0,83-1,39 3-5	0,28 1	0,51 .020	0,076 .003	0,1 .004	8,38 .330
11SM701-T	Lower force	4 Amps S	0,56 2	0,14 .5	0,51 .020	0,13 .005	0,051 .002	8,38 .330
11SM1-T	Most applications	5 Amps J	0,83-1,39 3-5	0,28 1	0,51 .020	0,13 .005	0,1 .004	8,38 .330
11SM3-T	Operating in temperatures to +250°F (121°C)	5 Amps J	0,83-1,39 3-5	0,28 1	0,51 .020	0,13 .005	0,1 .004	8,38 .330
11SM244-T	Operating in temperatures to +400°F (204°C) 100 hrs.	5 Amps *	0,83-1,39 3-5	0,28 1	0,51 .020	0,13 .005	0,1 .004	8,38 .330
11SM401-T	Less differential travel	5 Amps K	0,97 3.5 max.	0,28 1	0,51 .020	0,13 .005	0,025 .001	8,38 .330
21SM284-T2 (MS25085-2)	MIL-S-8805 application requirements	5 Amps R	0,83-1,39 3-5	0,28 1	0,76 .030	0,13 .005	0,1 .004	8,38 .330
21SM284 (MS25085-1)	MIL-S-8805 application requirements, solder terminals	5 Amps R	0,83-1,39 3-5	0,28 1	0,76 .030	0,13 .005	0,1 .004	8,38 .330
22SM1-T	Best stability under varying humidity	5 Amps J	0,83-1,39 3-5	0,28 1	0,51 .020	0,13 .005	0,1 .004	8,38 .330
41SM1-T	Up to 11 ampere 1/4 hp (AC) load handling	11 Amps M	0,83-1,39 3-5	0,28 1	0,76 .030	0,13 .005	0,1 .004	8,38 .330

*For electrical data call 1-800-537-6945

411SM1	Sealed plunger construction	5 Amps K	0,83-2,09 3-7.5	0,28 1	0,51 .020	0,13 .005	0,1 .004	8,38 .330
411SM23	As above with gold contacts	1 Amp N	0,83-2,09 3-7.5	0,28 1	0,51 .020	0,13 .005	0,1 .004	8,38 .330

Except where stated * ±0,38mm
±.015 in.

Miniature/
Subminiature

Basic Switches

Subminiature

SM Series

Characteristics: O.F. — Operating Force; R.F. — Release Force; P.T. — Pretravel; O.T. — Overtravel; D.T. — Differential Travel; O.P. — Operating Position.

ORDER GUIDE

INTEGRAL LEVERS



Dim. Dwg. Fig. 4

Catalog Listing	Description	Electrical Data And UL Code Page 20	O.F. max. newtons ounces	R.F. max. newtons ounces	P.T. max. mm inches	O.T. min. mm inches	D.T. max. mm inches	O.P. mm inches
311SM1-T	.285 inch (7,24mm) straight lever	5 Amps J	0,39 1.4	0,07 .25	2,16 .085	0,51 .020	0,48 .019	8,64±1,5 .340±.060
311SM23-T	As above with gold contacts	1 Amp N	0,39 1.4	0,07 .25	2,16 .085	0,51 .020	0,48 .019	8,64±1,5 .340±.060
311SM701-T	.285 inch (7,24mm) straight lever. Lower force	4 Amps S	0,16 .57	0,03 .11	2,16 .085	0,51 .020	0,36 .014	8,64±1,5 .340±.060

311SM2-T	.565 inch (14,35mm) straight lever	5 Amps J	0,31 1.1	0,05 .18	3,05 .120	0,66 .026	0,69 .027	8,51±2 .335±.080
311SM43-T	As above with gold contacts	1 Amp N	0,31 1.1	0,05 .18	3,05 .120	0,66 .026	0,69 .027	8,51±2 .335±.080
311SM702-T	.565 inch (14,35mm) straight lever. Lower force	4 Amps S	0,11 .4	0,02 .07	3,05 .120	0,66 .026	0,38 .015	8,51±2 .335±.080

311SM3-T	1.765 inch (44,8mm) straight lever	5 Amps J	0,15 .53	0,02 .07	7,87 .310	1,45 .057	2,8 .110	7,11±4,3 .280±.170
311SM17-H58	As above with gold contacts	1 Amp N	0,15 .53	0,02 .07	7,87 .310	1,45 .057	2,8 .110	7,11±4,3 .280±.170
311SM703-T	1.765 inch (44,8mm) straight lever. Lower force	4 Amps S	0,06 .2	0,01 .04	7,87 .310	1,45 .057	1,78 .070	7,11±4,3 .280±.170

311SM4-T	.251 inch (6,38mm) simulated roller lever	5 Amps J	0,39 1.4	0,07 .25	2,16 .085	0,46 .018	0,48 .019	11,7±1,5 .460±.060
311SM25-T	As above with gold contacts	1 Amp N	0,39 1.4	0,07 .25	2,16 .085	0,46 .018	0,48 .019	11,7±1,5 .460±.060
311SM704-T	.251 inch (6,38mm) simulated roller lever. Lower force	4 Amps S	0,16 .57	0,03 .11	2,16 .085	0,46 .018	0,33 .013	11,7±1,5 .460±.060

311SM5-T	.535 inch (13,6mm) simulated roller lever	5 Amps J	0,31 1.1	0,05 .18	3,05 .120	0,66 .026	0,69 .027	11,56±2 .455±.080
311SM705-T	.535 inch (13,6mm) simulated roller lever. Lower force	4 Amps S	0,11 .4	0,02 .07	3,05 .120	0,66 .026	0,38 .015	11,56±2 .455±.080

311SM6-T	.251 inch (6,38mm) roller lever	5 Amps J	0,39 1.4	0,07 .25	2,16 .085	0,46 .018	0,48 .019	14,2±1,5 .560±.060
311SM68-T	As above with gold contacts	1 Amp N	0,39 1.4	0,07 .25	2,16 .085	0,46 .018	0,48 .019	14,2±1,5 .560±.060
311SM706-T	.251 inch (6,38mm) roller lever. Lower force	4 Amps S	0,16 .57	0,03 .11	2,16 .085	0,46 .018	0,33 .013	14,2±1,5 .560±.060

311SM7-T	.535 inch (13,6mm) roller lever	5 Amps J	0,31 1.1	0,05 .18	3,05 .120	0,66 .026	0,69 .027	14,1±2 .555±.080
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Dim. Dwg. Fig. 10

Basic Switches

Subminiature

SM Series

ORDER GUIDE

INTEGRAL LEAF



Dim. Dwg. Fig. 11

Catalog Listing	Recommended For	Electrical Data And UL Code Page 20	O.F. max. newtons ounces	R.F. min. newtons ounces	P.T. max. mm inches	O.T. min. mm inches	D.T. max. mm inches	O.P. mm inches
111SM1-T	Force and stability of flexible leaf actuator	5 Amps J	1,95 7	0,56 2	5,54 .218	0,76 .030	0,76 .030	8,89±0,76 .350±.030
111SM17-T	As above with gold contacts	1 Amp N	1,95 7	0,56 2	5,54 .218	0,76 .030	0,76 .030	8,89±0,76 .350±.030



Dim. Dwg. Fig. 12

111SM2-T	Flexible leaf with roller	5 Amps J	1,95 7	0,56 2	5,56 .219	0,76 .030	0,64 .025	14,3±0,76 .562±.030
111SM23-T	As above with gold contacts	1 Amp N	1,95 7	0,56 2	5,56 .219	0,76 .030	0,64 .025	14,3±0,76 .562±.030

Miniature/
Subminiature

Basic Switches

Subminiature

SM Series

Characteristics: O.F. — Operating Force; R.F. — Release Force; P.T. — Pretravel; O.T. — Overtravel; D.T. — Differential Travel; O.P. — Operating Position; F.P. — Free Position

* All characteristics are taken with actuator assembled to Catalog Listing 11SM3-T as shown.

AUXILIARY ACTUATORS

Switches are not included with the actuators.



Dim. Dwg. Fig. 14

ORDER GUIDE

Catalog Listing	Description	Actuator Length "A" mm inches	O.F. max. newtons ounces	R.F. min. newtons ounces	P.T. max. mm inches	O.T. min. mm inches	D.T. max. mm inches	O.P. mm inches	F.P. max. mm inches
JS-2	Straight leaf	16,8 .66	2,78 10	0,56 2	1,98 .078	0,38 .015	0,38 .015	8,89±0,38 .350±.015	11,3 .445



Dim. Dwg. Fig. 14

JS-5	Roller leaf (Bronze roller)	15 .59	2,78 10	0,83 3	1,98 .078	0,38 .015	0,38 .015	14,2±0,38 .580±.015	16,9 .665
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Dim. Dwg. Fig. 14

JS-7	Formed leaf (Simulated roller)	14,7 .58	2,78 10	0,56 2	2,39 .094	0,79 .031	0,38 .015	9,65±0,38 .380±.015	12,1 .475
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Dim. Dwg. Fig. 16

JS-220	Straight lever	26,2† 1.03	0,28 1	0,04 .14	3,18 .125 approx.	0,76 .030	0,76 .030	10,3 .406 approx.	—
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Dim. Dwg. Fig. 16

JS-246	Roller lever (Steel roller)	25,4† 1.00	0,28 1	0,04 .14	3,18 .125 approx.	0,76 .030	0,76 .030	14,3 .562 approx.	—
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Dim. Dwg. Fig. 16

JS-221	Formed lever (Simulated roller)	25,4† 1.00	0,28 1	0,04 .14	3,18 .125 approx.	0,76 .030	0,76 .030	11,6 .455 approx.	—
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JS-33**	Tandem leaf	5,3 .21	5,00 18	2,78 10	2,36 .093	0,15 .006	0,38 .015	8,89±0,38 .350±.015	10,5 .415
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JS-31**	Tandem roller leaf (Bronze roller)	4,3 .17	11,1 40	4,45 16	2,36 .093	0,13 .005	0,38 .015	14,5±0,38 .570±.015	16,1 .635
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**Travel characteristics on tandem actuators vary with actual basic switch characteristics.
NOTE: Above actuators should be used below +300°F.
See page 79 for other actuators that may be used with SM Switches at higher temperatures.
†"A" measurement is from the pivot point of lever to the point indicated on drawing.

Basic Switches

Subminiature

SM Series

Courtesy of Steven Engineering, Inc. • 230 Ryan Way, South San Francisco, CA 94080-6370 • Main Office: (650) 588-9200 • Outside Local Area: (800) 258-9200 • www.stevenengineering.com

Miniature/
Subminiature

MOUNTING DIMENSIONS (for reference only)

PIN PLUNGER

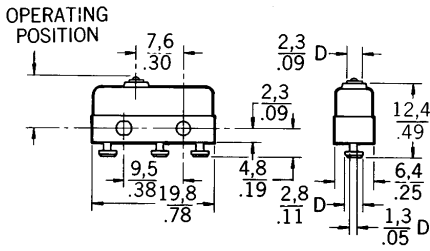


Fig. 1

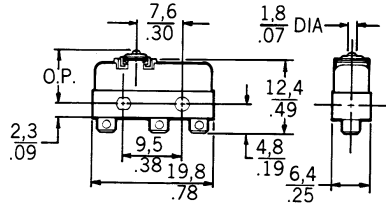


Fig. 2

INTEGRAL LEVERS

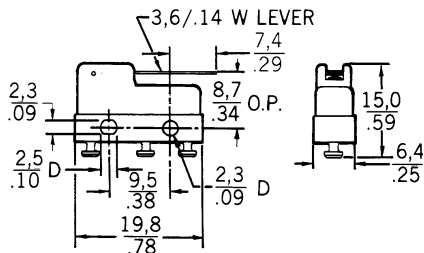


Fig. 4

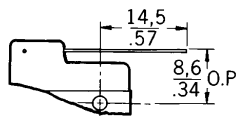


Fig. 5

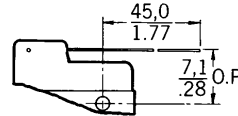


Fig. 6

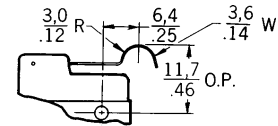


Fig. 7

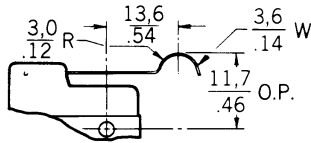


Fig. 8

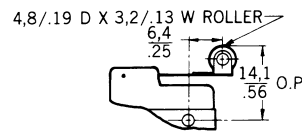


Fig. 9

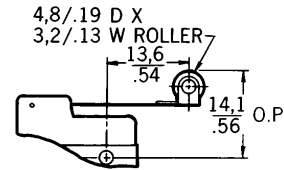


Fig. 10

INTEGRAL LEAFS

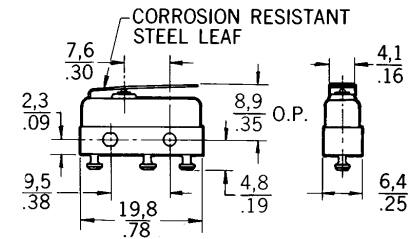


Fig. 11

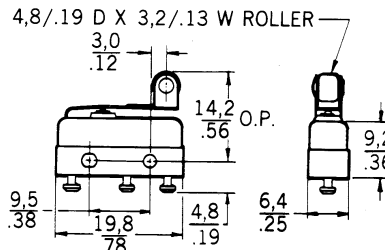


Fig. 12

Mounting holes accept pins or screws of .087 inch (2,21 mm) max. diameter

Key: $\frac{0.0}{0.00} = \frac{\text{mm}}{\text{inches}}$

AUXILIARY ACTUATORS

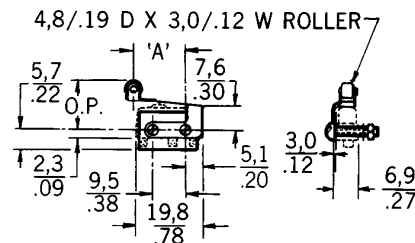


Fig. 14

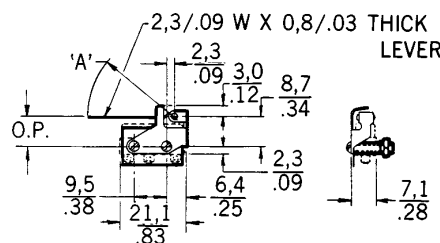


Fig. 16

Switches are not included with the actuators.

Basic Switches

Subminiature/Miniature

ELECTRICAL DATA AND UL CODES

MINIATURE/SUBMINIATURE BASIC SWITCHES

Most of the switches in this section are UL recognized and CSA certified. The current and voltage values shown are based on test conditions specified by these agencies. Electrical life of the switch is influenced by each application condition as well as by voltage and current.

Circuitry	Electrical Data
Single-pole double-throw	A 5 amps res., 3 amps ind., (sea level), 4 amps res., 2 amps ind., (50,000 feet), 28 vdc 5 amps res. or ind. 115 vac, 60 Hz. UL/CSA rating: 5 amps, 250 vac.
Single-pole double-throw	B 7 amps res., 4 amps ind., (sea level), 7 amps res., 2.5 amps ind., (50,000 feet), 28 vdc. UL/CSA rating: 7 amps, 250 vac.
Single-pole double-throw	C 3.5 amps res., 2 amps ind., (sea level), 3.5 amps res., 1.5 amps ind., (50,000 feet), 28 vdc. UL rating: 7 amps, 250 vac.
Single-pole double-throw	D 1 amp res., 0.5 amp ind., (sea level and 50,000 feet), 28 vdc. UL/CSA rating: 1 amp, 125 vac.
Single-pole double-throw	E 3 amps res., 2 amps ind., (sea level), 28 vdc. UL rating: 3 amps, 250 vac.
Single-pole double-throw	F 7 amps res., 4 amps ind., 2.5 amps lamp load, (sea level), 4 amps res., 2.5 amps ind., 2.5 amps lamp load, (50,000 feet), 28 vdc. 7 amps res., 7 amps ind., 2 amps lamp load, 115 vac, 60 Hz (sea level).
Single-pole double-throw	G 2 amps res., lamp ind., (sea level) 28 vdc.
Single-pole double-throw	H .010 amp res. and ind., (sea level). 28 vdc. UL/CSA rating: 1 amp, 125 vac.
Single-pole double-throw	I 7 amps res., 4 amps ind., (sea level), 28 vdc.
Single-pole double-throw	J 5 amps res., 3 amps ind., (sea level), 5 amps res., 2.5 amps ind., (50,000 feet), 28 vdc. UL rating: 5 amps, 250 vac.
Single-pole double-throw	K UL rating: 5 amps, 125 or 250 vac.
Single-pole double-throw	L 1 amp res., 1/2 amp ind., (sea level) 28 vdc.
Single-pole double-throw	M UL rating: 11 amps and 1/4 hp, 125 or 250 vac.
Single-pole double-throw	N 1 amp res., 0.5 amp ind., 30 vdc. UL rating: 1 amp, 125 vac.
Single-pole double-throw	P 1 amp res., 30 vdc. UL rating: .1 amp, 125 vac.
Single-pole double-throw	R 5 amps res., 3 amps ind., 2.4 amps lamp load (sea level), 5 amps res., 2.5 amps ind., 2.4 amps lamp load, (50,000 feet), 28 vdc. 5 amps res., 5 amps ind., 1.5 amps lamp load, 115 vac. 60 Hz (sea level)

Circuitry	Electrical Data
Single-pole double-throw	S UL rating: 4 amps, 250 vac.
Single-pole double-throw	T UL/CSA rating: 11 amps and 1/3 hp, 125, 250, or 277 vac; 1/2 amp, 125 vdc; 1/4 amp, 250 vdc; 4 amps, 125 vac "L" (lamp load).
Single-pole double-throw	TT UL/CSA rating: 10 amps and 1/3 hp, 125 or 250 vac; 1/2 amp, 125 vdc; 1/4 amp, 250 vdc; 4 amps, 125 vac "L" (lamp load).
Single-pole double-throw unless otherwise noted in order guide	UU 10 amps res., 10 amps ind., (sea level), 6 amps ind. (50,000 feet), 6 amps motor load, 30 vdc.
Single-pole double-throw	U UL/CSA rating: 15.1 amps and 1/2 hp, 125 or 250 vac. 1/2 amp, 125 vdc; 1/4 amp, 250 vdc; 5 amps, 120 vac "L" (lamp load).
Single-pole double-throw	VV UL/CSA rating: 3 amps-125, 250, 277 vac; 1/10 hp-250 vac
Single-pole double-throw	V UL/CSA rating: 10 amps and 1/4 hp, 125 or 250 vac; 1/2 amp, 125 vdc; 1/4 amp, 250 vdc; 3 amps, 125 vac "L" (lamp load).
Single-pole double-throw	W 10 amps, 250 vac or 28 vdc; 1/2 amp, 125 vdc; 1/4 amp, 250 vdc.
Single-pole double-throw	X UL rating: 1 amp, 125 vac.
Single-pole double-throw	Y 10 amps and 1/3 hp, 125 or 250 vac; 4 amps, 125 vac "L" (lamp load).
Single-pole double-throw	YY UL/CSA rating: 5 amps-125, 250, 277 vac 1/10 hp-250 vac
Two-circuit double-break	Z 10 amps, 125 or 250 vac, or 30 vdc. UL/CSA rating: 10 amps, 125 or 250 vac; 1/2 hp, 125 vac.
Four-circuit double-break	ZZ UL rating: 5 amps and 1/10 hp. 125 or 250 vac.
Single-pole double-throw	AA UL rating: 20 amps, 277 vac. 1 hp, 125 vac; 2 hp, 250 vac.
Single-pole double-throw	BB UL rating: 25 amps, 277 vac. 1 hp, 125 vac; 2 hp, 250 vac.