

L-Series Sealed Rocker Switches



Making the right connections has never been easier — now that Carlingswitch has introduced the L-Series Rocker Switch. Not only does this innovative switch offer total design flexibility, it sets new standards for both performance and reliability. It's IP67 certified, and able to withstand temperatures from -40°C to +85°C. Features include countless switch and lamp circuit combinations, LED illuminated lenses or laser etched rockers, as well as hundreds of legend choices and several accessories.

General Specifications

Electrical

Contact Rating4VA @ 24VDC (MAX) resistive 15 amps, 125 VAC 10 amps, 250 VAC 20 amps, 4-14 VDC 15 amps, 15-28 VDC
Dielectric Strength	1250 Volts RMS between pole to pole 3750 Volts RMS between live parts and accessible surfaces
Insulation Resistance	50 Megohms
Initial Contact Resistance	10 milliohms max. @ 4 VDC
Life	100,000 cycles maintained, 50,000 cycles momentary at rated voltage and current
Contacts	90/10 silver-nickel, silver tin-oxide, gold
Terminals	Brass or copper/silver plate 3/16" (4.76mm) & 1/4" (6.3mm) Quick Connect terminations standard.

Mechanical

Endurance 250,000 cycles minimum

Physical Characteristics

Lighted	Incandescent - rated 10,000 hours LED - rated 100,000 hours 1/2 life (LED is internally ballasted for voltages to 24 VDC)
Seals	Rocker, base & bracket are sealed.
Base	Polyester blend rated to 85°C with a flammability rating of 94VO.
Actuator	Nylon 66 Reinforced, rated to 105°C (modular lens). Locking rocker, standard rocker & paddle. Laser etching with a polycarbonate actuator.
Lens	Polycarbonate rated at 100°C. Front snap-in.
Connector	Nylon 66 rated at 85°C. Polarized.

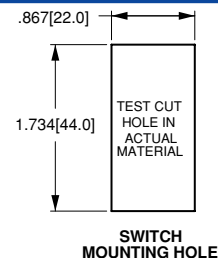
Actuator Travel (Angular Displacement)

2 position	26°
3 positions	13° from center

Environmental

Environmental	IP67, representing an index of protection as applied to electrical equipment in accordance with IEC 529, BS 5490, DIN 400 50 & NFC 20 010.
Corrosion Resistance	MFG Class III per ASTM B-827 & B-845, Method H, with 3 years exposure
Operating Temperature	-40° C to + 85° C
Vibration 1	Per Mil-Std 202F, Method 204D Test Condition A 0.06 DA or 10G's 10-500 Hz. Tested with VCH connector. Test criteria - No loss of circuit during test and pre and post test contact resistance.
Vibration 2	Resonance search 24-50 Hz 0.40 DA 50-2000 ±10 G's peak Results Horizontal Axis 3-5 G's max. Random 24 Hz 0.06 PSD-Gsq/Hz 60 Hz 0.50 100 Hz 0.50 200 Hz 0.025 2000 Hz 0.025 No loss of circuit during test; <10µ chatter.
Shock	Per Mil-Std 202F, Method 213B, Test Condition K @ 30G's. Tested with VCH connector. Test criteria - No loss of circuit during test, pre, and post test contact resistance.
Salt Spray	Per Mil-Std 202F, Method 101D, Test Condition A, 48 Hrs.
Thermal Shock	Per Mil-Std 202F, Method 107F, Test Condition A, -55°C to 85°C. Test criteria - pre and post test contact resistance
Moisture Resistance	Per Mil-Std 202F, Method 106F, Test Criteria - pre and post test contact resistance

Mounting Specifications

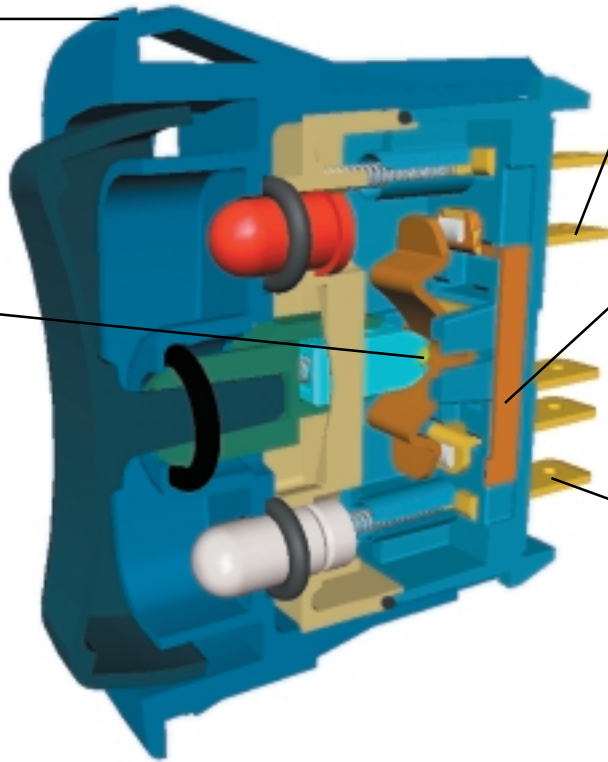


Eliminates need for retooling

Neatly proportioned, our L-Series fits into industry standard mounting holes of 1.734" x .867" and 44.0mm x 22.0mm

Withstands extreme temperatures

Roller pin mechanism eliminates need for lubricants, so it can withstand from -40°C to +85°C.



Integrates easily into your system

You can choose from a variety of termination options, including .250 TAB QC & .187 TAB QC.

Ensures greater shock protection

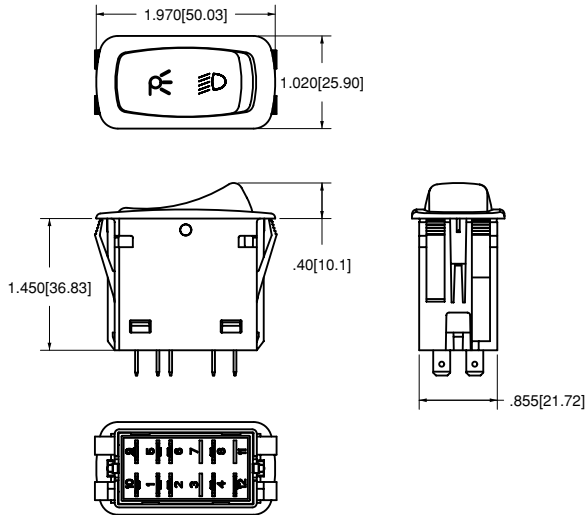
Welded lamp connection and one-piece internal, jumperless terminal withstand extreme shock and vibration.

Maximizes your design flexibility

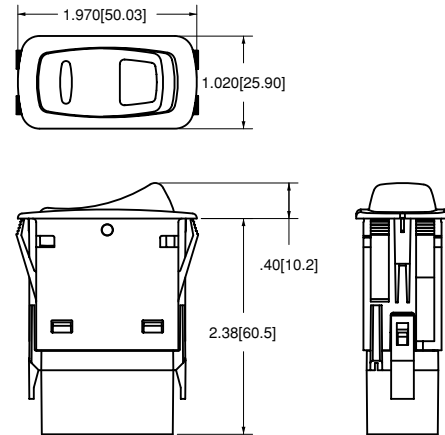
Twelve terminals offer you an extensive range of switch and lamp circuit options, including LED or incandescent illumination.

L-Series Dimensional Specifications & Accessories: in.[mm]

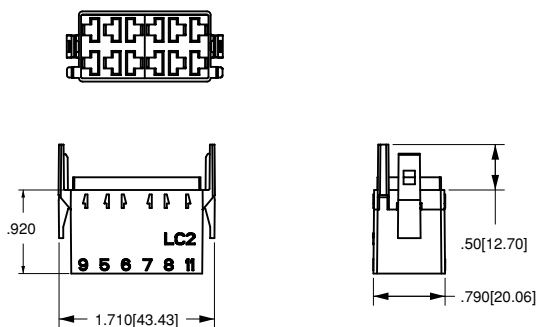
L SERIES
SHOWN WITH LASER ETCHED ACTUATOR



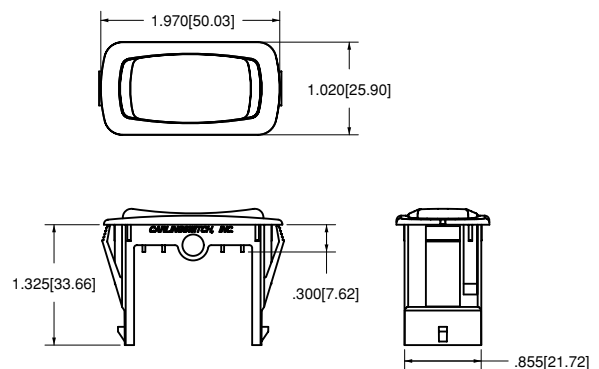
L SERIES
SHOWN WITH SNAP-IN LENS AND CONNECTOR



L SERIES
CONNECTOR



L SERIES
HOLE PLUG



Switch Circuit Diagrams¹

CIRCUIT CODE	SCHEMATIC	CIRCUIT CODE	SCHEMATIC	CIRCUIT CODE	SCHEMATIC
11		23		53	
12		24		54	
13		25		55	
14		26		56	
15		27		57	
16		28		58	
17		30		61	
18		31		62	
21		51		63	
22		52		64	

NOTES
See page 29 for additional switch and lamp circuit diagrams and schematic legend.
1 Other circuits available. Consult factory.

Switch Circuit Diagrams¹

Lamp Circuit Diagrams¹

CIRCUIT CODE	SCHEMATIC
65	
66	
67	
68	
69	
70	
71	
72	

ILLUMIN. CODE	CIRCUIT DIAGRAM
A	
B	
C	
D	
E	
F	
G	
H	

LEGEND	
SYMBOL	DEFINITION
	TERMINAL LOCATION
	LAMP LOCATION
	MAINTAINED CIRCUIT
	MOMENTARY CIRCUIT
	INTERNAL CONNECTION (JUMPER TERMINAL)
	2 POSITION CONNECTION
	2 POSITION
	3 POSITION

NOTES
See page 28 for additional switch circuit diagrams.
1 Other circuits available. Consult factory.

L	11	D	3	C	H	N
1 <i>Series</i>	2 <i>Circuit</i>	3 <i>Rating</i>	4 <i>Termination</i>	5 <i>Illumination</i>	6 <i>Lamp</i>	7 <i>Lamp</i>

1 SERIES

- L Standard Switch
- L w/o rocker
- LL Actuator Only

2 CIRCUIT

() - momentary

Position:	1	2	3
SP DP	2&4 6&8	CONNECTED TERMINALS	1&2 5&6
11	21 ON	NONE	OFF
12	22 (ON)	NONE	OFF
13	23 ON	NONE	(OFF)
14	24 ON	NONE	ON
15	25 ON	NONE	(ON)
16	26 ON	OFF	ON
17	27 ON	OFF	(ON)
18	28 (ON)	OFF	(ON)
CIRCUITS WITH JUMPER TERMINALS			
30 ²	(2,4&5),(1,6&8)	OFF, OFF	(1,2&8),(4,5&6)
31 ²	1,2&5	2,3&7	2,4&8
PROGRESSIVE CIRCUITS			
51	3&4	2&3	1&2
52	3&4	2&3	OFF
53	(3&4)	2&3	1&2
54	(3&4)	2&3	OFF
55	(3&4)	2&3	(1&2)
56	(3&4)	2&3	(OFF)
57	3&4	2&3	(OFF)
58 ²	2&4	2&3	1&2
61	3&4,7&8	2&3,6&7	1&2,5&6
62	3&4,7&8	2&3,6&7	OFF, OFF
63	(3&4),(7&8)	2&3,6&7	1&2,5&6
64	(3&4),(7&8)	2&3,6&7	OFF,OFF
65	(3&4),(7&8)	2&3,6&7	(1&2),(5&6)
66	(3&4),(7&8)	2&3,6&7	(OFF),(OFF)
67	3&4,7&8	2&3,6&7	(OFF),(OFF)
68	2&4,7&8	2&4,OFF	OFF,OFF
69 ²	2&4,1,7&8	2&4,OFF	OFF,OFF
70	(2&4),(7&8)	2&4,5&7	(1&2),(5&7)
71	(2&4),(7&8)	2&4,5&7	1&2,5&7
72	2&4,7&8	2&4,5&7	1&2,5&7

3 RATING

- 1** .4VA @ 28VDC Resistive
- 4** 10A 250VAC 1/2 HP, 15A 125 VAC 1/2 HP
No Agency Listings
- B** 15A 24V
- C** 20A 18V
- D** 20A 12V
- E** 15A 12V
- G** 20A 6V
- H** 20A 3V

4 TERMINATION

- 1**^{2,4} .250 (6.4mm) TAB (QC)
- 2** Solder Lug
- 3**^{2,3} .187 (4.7mm) TAB (QC)
- 4** PC
- 5** Wire Leads

5 ILLUMINATION

Lamp #1 located above terminals 9 & 10 end of switch.
Lamp #2 located above terminals 11 & 12 end of switch.
Positive (+) and negative (-) symbols apply to LED lamps only.

	LAMPS	ILLUMINATION TYPE	LAMP WIRED TO TERMINALS	
S	None			
A	# 1	Independent	10+	9-
B	# 2	Independent	12+	11-
C	# 1	Independent	10+	9-
	&# 2	Independent	12+	9-
D	# 1	Dependent	4+	9-
E	# 1	Independent	10+	9-
	&# 2	Dependent	4+	9-
F ⁵	# 1	Independent	10+	9-
	&# 2	Dependent	8+	9-
G	# 1	Dependent	4+	9-
	&# 2	Independent	10+	9-
H	# 1	Both Independent	10+	9-
	&# 2	(in series)		

6, 7 LAMP #1 and/or LAMP #2

Selection 6: above terminals 10 and 9
Selection 7: above terminals 12 and 11
Use same coding for both selections.

0 - NO LAMP THIS LOCATION

Incandescent

4 3V

5 6V

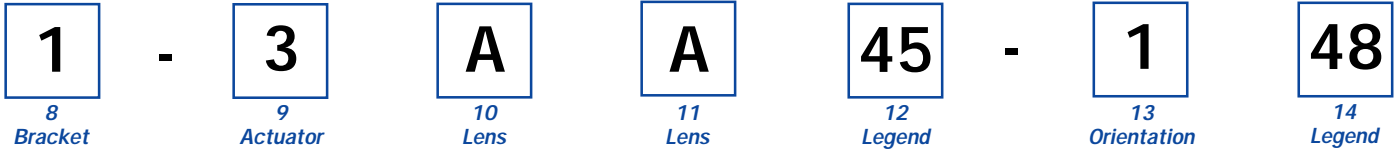
6 12V

7 18V

8 24V

LED*	Red	Amber	Green
2VDC	A	L	F
6VDC	B	M	G
12VDC	C	N	H
24VDC	D	P	J

* Typical current draw for LED is 20ma.
Blue/Green and White LEDs also available. Consult factory.
Consult factory for "daylight bright" LED options.



8 BRACKET COLOR¹

BRACKET

- 1 Black
- 2 White
- 3 Gray
- 4 Red

9 ACTUATOR STYLE & COLOR¹

ROCKER

- A Black
- B White
- C Gray
- D Red

3 Laser Etched Black

PADDLE

- 4 Laser Etched Black
- J Black
- N White
- K Gray
- M Red

10 & 11 LENS STYLE & COLOR

Lens color for LEDs must be clear, white, or match color of LED. Green or blue lenses are not recommended with Neon lamps.

0 - No Actuator Z - No Lens

	Clear	White	Amber	Green	Red	Blue	Lens Style
1	n/a	B	G	M	T		Large Transparent
n/a	7	C	H	N	U		Large Translucent
3	n/a	D	J	P	V		Bar Transparent
n/a	9	E	K	R	W		Bar Translucent
5	A	F	L	S	Y		Laser Etch Background Color

12 LASER ETCH, LENS OR BODY LEGENDS

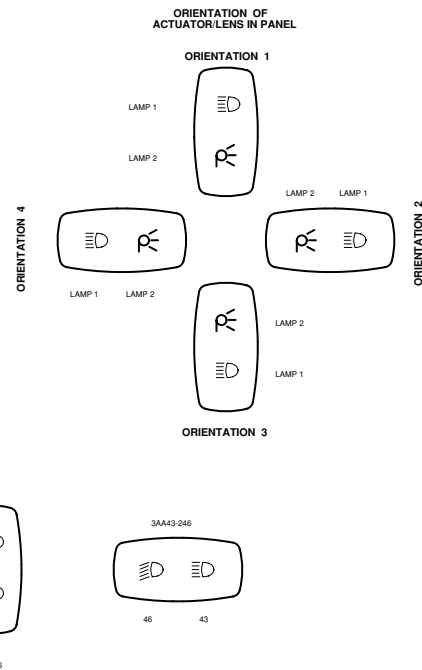
00 - NO LEGEND

For legend options & codes, see page 34 of this catalog, or consult factory. Use body legend codes for laser etched images.

13 LEGEND ORIENTATION

0 - NO LEGEND

- 1 Vertical (lamp 1 on top)
- 2 Horizontal (lamp 1 on right)
- 3 Vertical (lamp 1 on bottom)
- 4 Horizontal (lamp 1 on left)



14 ACTUATOR LENS LEGENDS

00 NO LEGEND

For legend options & codes, see page 34 of this catalog, or consult factory.

L-Series Components:

To order **switch without actuator** specify: **L** with code selections **2** through **8**. (ex.) L1113S001-00000-000

To order **actuator separately** specify: **LL** with codes from above scheme for selections 9 through 14. (ex.) LLANZAMA-100

NOTES

Shading indicates available options. Contact factory for availability of other listed options.

Consult factory to verify horsepower rating for your particular circuit choice.

- 1 Custom colors are available. Consult factory.
- 2 Circuits 30, 31, 58, 69 and termination codes 1 or 3 not available with rating codes 4, C, D, G or H.
- 3 Termination 3 only available with rating codes 1, B, and E.
- 4 Termination 1 not available with rating code 4.
- 5 Not available with circuits 11-18, 51-57 and 69.



L-Series