

**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 Rating . . . . .	.4VA @ 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.

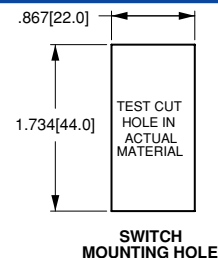
**Actuator Travel (Angular Displacement)**

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**

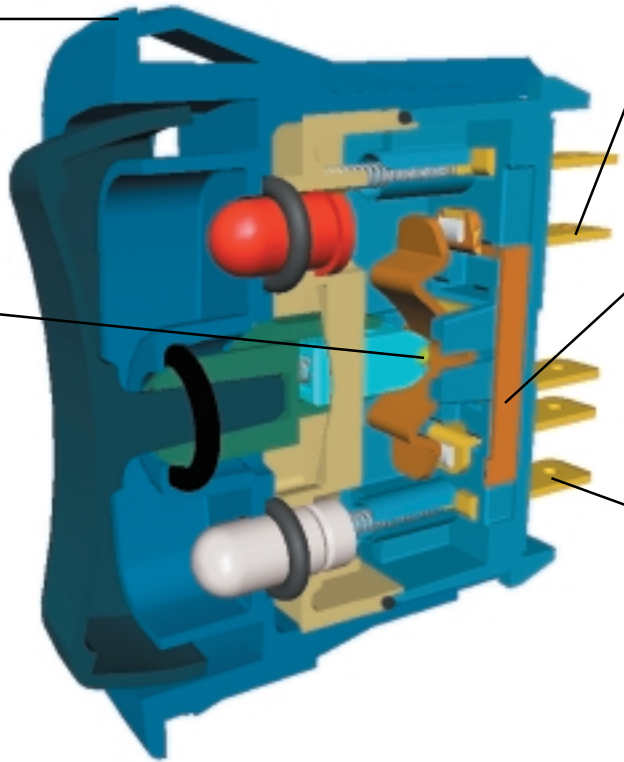


**Eliminates need for retooling**

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**

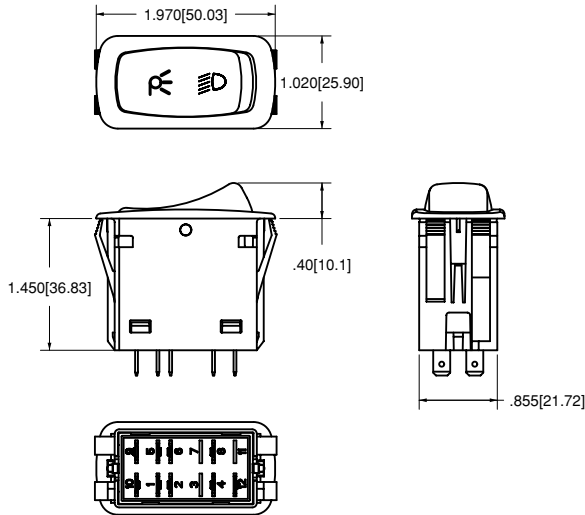
Welded lamp connection and one-piece internal, jumperless terminal withstand extreme shock and vibration.

**Maximizes your design flexibility**

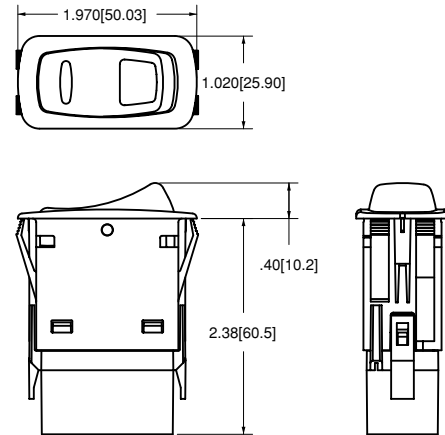
Twelve terminals offer you an extensive range of switch and lamp circuit options, including LED or incandescent illumination.

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

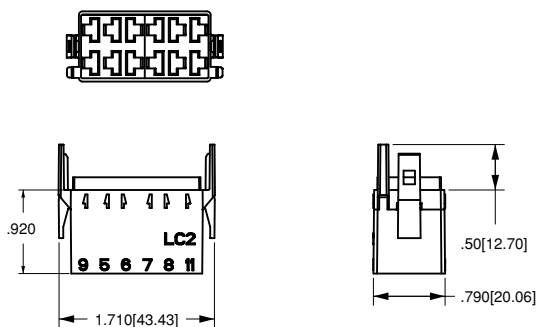
**L SERIES**  
SHOWN WITH LASER ETCHED ACTUATOR



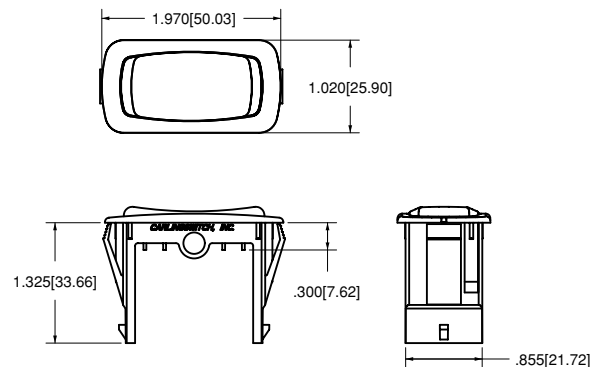
**L SERIES**  
SHOWN WITH SNAP-IN LENS AND CONNECTOR



**L SERIES**  
CONNECTOR



**L SERIES**  
HOLE PLUG



Switch Circuit Diagrams<sup>1</sup>

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 Diagrams<sup>1</sup>

Lamp Circuit Diagrams<sup>1</sup>

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.

<b>L</b>	<b>11</b>	<b>D</b>	<b>3</b>	<b>C</b>	<b>H</b>	<b>N</b>
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
	2&4	CONNECTED	1&2
SP DP	6&8	TERMINALS	5&6
<b>11</b>	<b>21</b> ON	NONE	OFF
<b>12</b>	<b>22</b> (ON)	NONE	OFF
<b>13</b>	<b>23</b> ON	NONE	(OFF)
<b>14</b>	<b>24</b> ON	NONE	ON
<b>15</b>	<b>25</b> ON	NONE	(ON)
<b>16</b>	<b>26</b> ON	OFF	ON
<b>17</b>	<b>27</b> ON	OFF	(ON)
<b>18</b>	<b>28</b> (ON)	OFF	(ON)
CIRCUITS WITH JUMPER TERMINALS			
<b>30</b> <sup>2</sup>	(2,4&5),(1,6&8)	OFF, OFF	(1,2&8),(4,5&6)
<b>31</b> <sup>2</sup>	1,2&5	2,3&7	2,4&8
PROGRESSIVE CIRCUITS			
<b>51</b>	3&4	2&3	1&2
<b>52</b>	3&4	2&3	OFF
<b>53</b>	(3&4)	2&3	1&2
<b>54</b>	(3&4)	2&3	OFF
<b>55</b>	(3&4)	2&3	(1&2)
<b>56</b>	(3&4)	2&3	(OFF)
<b>57</b>	3&4	2&3	(OFF)
<b>58</b> <sup>2</sup>	2&4	2&3	1&2
<b>61</b>	3&4,7&8	2&3,6&7	1&2,5&6
<b>62</b>	3&4,7&8	2&3,6&7	OFF, OFF
<b>63</b>	(3&4),(7&8)	2&3,6&7	1&2,5&6
<b>64</b>	(3&4),(7&8)	2&3,6&7	OFF,OFF
<b>65</b>	(3&4),(7&8)	2&3,6&7	(1&2),(5&6)
<b>66</b>	(3&4),(7&8)	2&3,6&7	(OFF),(OFF)
<b>67</b>	3&4,7&8	2&3,6&7	(OFF),(OFF)
<b>68</b>	2&4,7&8	2&4,OFF	OFF,OFF
<b>69</b> <sup>2</sup>	2&4,1,7&8	2&4,OFF	OFF,OFF
<b>70</b>	(2&4),(7&8)	2&4,5&7	(1&2),(5&7)
<b>71</b>	(2&4),(7&8)	2&4,5&7	1&2,5&7
<b>72</b>	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**<sup>2,4</sup> .250 (6.4mm) TAB (QC)  
**2** Solder Lug  
**3**<sup>2,3</sup> .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	
<b>S</b>	None			
<b>A</b>	# 1	Independent	10+	9-
<b>B</b>	# 2	Independent	12+	11-
<b>C</b>	# 1	Independent	10+	9-
	&# 2	Independent	12+	9-
<b>D</b>	# 1	Dependent	4+	9-
<b>E</b>	# 1	Independent	10+	9-
	&# 2	Dependent	4+	9-
<b>F</b> <sup>5</sup>	# 1	Independent	10+	9-
	&# 2	Dependent	8+	9-
<b>G</b>	# 1	Dependent	4+	9-
	&# 2	Independent	10+	9-
<b>H</b>	# 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.

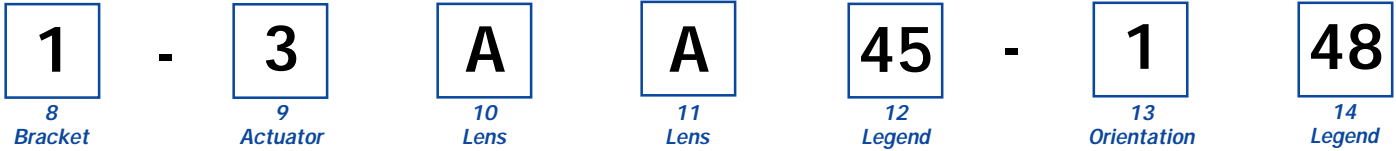
### 0 - NO LAMP THIS LOCATION

Incandescent

**4** 3V  
**5** 6V  
**6** 12V  
**7** 18V  
**8** 24V

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

\* 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 COLOR<sup>1</sup>**  
BRACKET

1	Black
2	White
3	Gray
4	Red

**9 ACTUATOR STYLE & COLOR<sup>1</sup>**  
**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

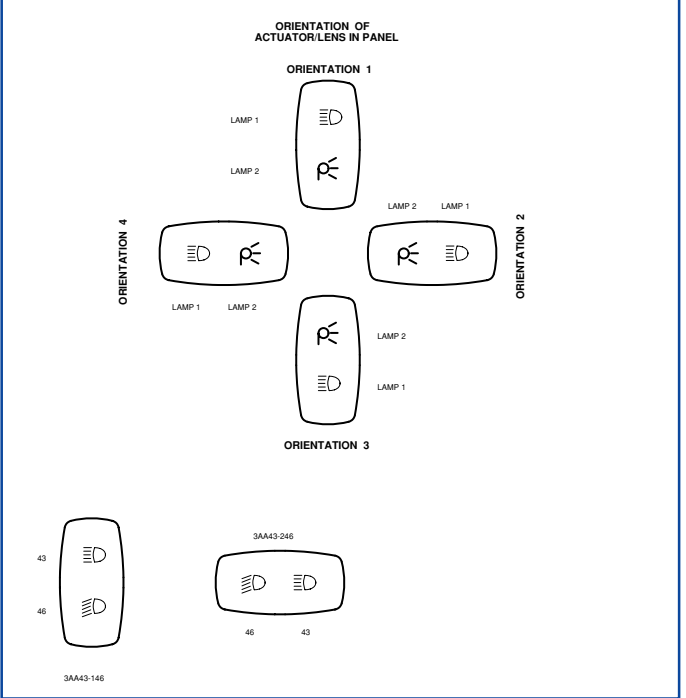
**10 & 11 LENS STYLE & COLOR**  
Lens color for LEDs must be clear, white, or match color of LED. Green or blue lenses are not recommended with Neon lamps.

<b>0</b> - No Actuator	<b>Z</b> - 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