L-Series

SEALED ROCKER SWITCHES

The L-Series rocker switch is an innovative product offering total design flexibility, while at the same time setting new standards for performance and reliability. Its versatile design features include a neatly proportioned size that fits into an industry standard mounting hole of 1.734 x .867 (44.0mm x 22.0mm), countless unique choices for ratings, circuits, colors, illuminations and laser etched legends. These single or double pole switches also feature a broad choice of actuator styles, colors, and lenses with up to twelve terminals offering an extensive range of switch and lamp circuit options, including LED or incandescent illumination. Additionally, an optional plug-in terminal connector enables pre-wiring of wire harness.









Resources:

Configure a Complete Part

Download CAD & Sales Drawing >

Watch Product Video



Product Highlights:

- · Sealed to IP67 for Above-Panel Components
- Withstands temperatures from -40°C to +85°C
- Vibration, shock, thermoshock, moisture and salt spray resistant

Typical Applications:

- · Construction machinery
- Agricultural equipment
- · On-highway transportation equipment



L-Series Switch DESIGN FEATURES

LED LIGHTING

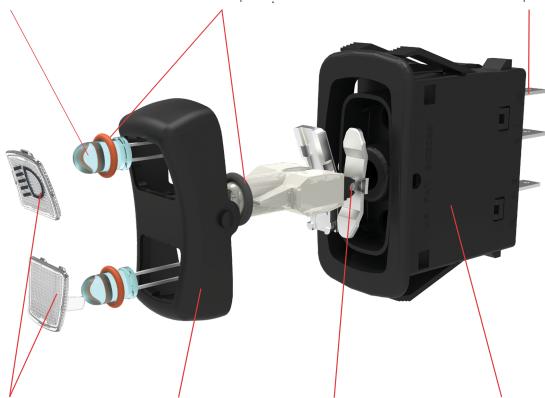
Utilize less current and are not affected by vibration, providing long lasting illumination. Available in 3 standard colors.

SEAL PROTECTION

Locks out elements such as water, dust & debris. Sealed to IP67 for Above-Panel Components

TERMINALS

Available with 2 industry standard termination options: .250 or .187 tabs with up to 12 terminal options.



LENS & LEGENDS

Lens available in 2 sizes and 6 standard colors in either translucent or transparent materials. Numerous symbols and text available for imprinting or laser etching.

ACTUATOR

Available in rocker or paddle styles. Several standard color options also available.

ROLLER PIN

Eliminates need for lubricants, increasing the temperature range of the switch from -40 $^{\circ}$ C to +85 $^{\circ}$ C [-40° F to 185° F].

BASE

Fits into industry standard mounting hole of 1.734 x .867 in [44.0mm x 22.0mm].

Electrical

Contact Rating .4VA @ 24VDC (MAX) resistive

> 15 amps, 125VAC 10 amps, 250VAC 20 amps, 4-14VDC 15 amps, 15-28VDC

Dielectric Strength 1250 Volts RMS between pole to

3750 Volts RMS between live parts and accessible surfaces

Insulation Resistance 50 Megaohms

Initial Contact Resistance 10 milliohms max. @ 4 VDC

Life Up to 100,000 cycles maintained,

50,000 cycles momentary circuit

and load dependent

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.

Physical

Actuator

Lighted Incandescent - rated 10,000

hours

LED - rated 100,000 hours 1/2 life (LED is internally ballasted for

voltages to 24 VDC)

Rocker, base & bracket are Seals

sealed.

Base Nylon 66 GF rated to 85°C with a

flammability rating of 94V0. Basic actuator structure molded

of thermoplastic polycarbonate

with a hard Nylon 66

thermoplastic surface overlay.

Lock Acetal

Polycarbonate rated at 100°C Lens 2 & 3 Position Rocker Style Function

Bracket Nylon Zytel

Connector Nylon 66 rated at 85°C. Polarized.

Actuator Travel (Angular Displacement)

26° 2 position

3 positions 13° from center

Environmental

Environmental IP67, for above-panel

components of actual switch only Mixed Flowing Gas MFG Class III Corrosion

per ASTM B-827 & B-845. Method

H, with 3 years exposure.

-40°C to + 85°C Operating Temperature

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.

Resonance search Vibration 2

24-50 Hz 0.40 DA 50-2000 ±10 G's peak

Results Horizontal Axis 3-5 G's

max Random

0.06 PSD-Gsq/Hz 24 Hz

60 Hz 0.50 100 Hz 0.50 200 Hz 0.025 0.025 2000 Hz

No loss of circuit during test; <10µ

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

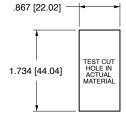
contact resistance.

Moisture Resistance Per Mil-Std 202F, Method 106F,

Test Criteria - pre and post test

contact resistance.

Mounting Specifications



MOUNTING HOLE

Panel Thickness Range Acceptable Panel Thickness .030 to .156 (.76mm to 3.96mm) Recommended: .030, .062, .093, .125 and .156

^{*}Manufacturer reserves the right to change product specification without prior notice.



1 SERIES

2 CIRCUIT 2 Terminal Orientation Position: 1 SP DP 2 & 4, 6 & 8 11 21 ON 12 22 (ON) 13 23 ON 14 24 ON 15 25 ON 16 26 ON 17 27 ON	() - momentary	
SP DP 2 & 4, 6 & 8 11 21 ON 12 22 (ON) 13 23 ON 14 24 ON 15 25 ON 16 26 ON 17 27 ON	SP - single pole - uses DP - double pole uses Terminals 9, 10 & 11 fo	terminals 5, 6 & 8.
18 28 (ON) CIRCUITS WITH JUMPER TE 30* (2,4&5), (1,6&8) 31 1, 2 & 5 PROGRESSIVE CIRCUITS 51 3 & 4 52 3 & 4 53 (3 & 4) 55 (3 & 4) 55 (3 & 4) 56 (3 & 4) 57 3 & 4 61 3 & 4, 7 & 8 62 3 & 4, 7 & 8 62 3 & 4, 7 & 8 63 (3 & 4), (7 & 8) 64 (3 & 4), (7 & 8) 65 (3 & 4), (7 & 8) 67 3 & 4, 7 & 8 68 2 & 4, 7 & 8 69 2 & 4, 7 & 8 69 2 & 4, 7 & 8 69 2 & 4, 7 & 8 69 2 & 4, 7 & 8 69 2 & 4, 7 & 8 69 2 & 4, 7 & 8 69 2 & 4, 7 & 8 69 2 & 4, 7 & 8 69 2 & 4, 7 & 8 69 2 & 4, 7 & 8 69 4 (3 & 4), (7 & 8) 71 (2 & 4), (7 & 8) 71 (2 & 4), (7 & 8) 72 (2 & 4), (7 & 8) 73 (2 & 4), (7 & 8) 74 (2 & 4), (7 & 8) 75 (2 & 4), (7 & 8) 76 (2 & 4), (7 & 8) 77 (2 & 4), (7 & 8) 78 (2 & 4), (7 & 8) 79 (2 & 4), (7 & 8) 80 ARAPANING CIRCUIT A2	OFF, OFF 2, 3 & 7 2, 3 & 7 2, 3 2, 3 2, 3 2, 3 2, 3 2, 3 2, 3 2, 3	3 1 & 2, 5 & 6 OFF (OFF) ON (ON) (ON) (ON) (1,2&8), (4,5&6) 2, 4 & 8 1 & 2 OFF 1 & 2 (OFF) (OFF) (OFF) (OFF) (OFF) (OFF) 1 & 2, 5 & 6 OFF, OFF 1 & 2, 5 & 6 OFF, OFF (1 & 2), (5 & 6) (OFF, OFF) (OFF, OFF) (OF
A3 6,7 & 8, 2 & 4 * Available with ratings 1, 4, &	NONE	OFF, 1 & 2

3 RATING ²

- .4VA @ 28VDC Resistive
- 10A 250VAC 1/2 HP, 15A 125VAC 1/2 HP, No Listings
- В 15A 24V С
- 20A 18V
- D 20A 12V
- 15A 12V G 20A 6V
- 20A 3V

4 TERMINATION 2,3

- .250 (6.4mm) TAB (QC)
- .187 (4.7mm) TAB (QC)

Do not use silicone based lubricants to reduce terminal insertion forces during connector assembly, as it is detrimental to function and performance.

Notes:

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

 Custom colors are available. Consult factory.

 Circuits 30, 31, 58, 69 are not available with rating codes 4, C, D, G or H.

 Termination 3 only available with rating codes 1, B, and E.

 Not available with circuits 11-18, 51-57 and 69.

5 ILLUMINATION

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

	Lamps	Illumination Type	Lamp	Wirec	to Terminals	
S	None					
Α	# 1	Independent	10+	9-		
В	# 2	Independent	12+	11-		
С	# 1	Independent	10+	9-		
	& # 2	Independent	12+	9-		
D	# 1	Dependent	4+	9-		
Ε	# 1	Independent	10+	9-		
	& # 2	Dependent	4+	9-		
F ⁴	# 1	Independent	10+	9-		
	& # 2	Dependent	8+	9-		
G	# 1	Dependent	4+	9-		
	& # 2	Independent	10+	9-		
Н	# 1	Both Independent	10+	9-		
	& # 2	(in series)				
J	# 1	Dependent	4+	9-		
	& # 2	Dependent	1+	9-		
1	# 2	Hazard	6+	10-	12-	
2	# 1	Hazard	6+	10-	12-	

6,7 LAMP (SAME CODING FOR BOTH SELECTIONS)

Selection 6: at	ove terminal:	s 10 & 9; Se	lection /: abo	ove terminal	s 12 & 11
No lamp	0				
Incandescent	4 3V	5 6V	6 12V	7 18V	8 24V
LED*	Red	Amber	Green		
2VDC	Α	L	F		
6VDC	В	M	G		
12VDC	С	N	Н		
24VDC	D	P	J		
* Camarult factors	ندما فمامنانمانه المسا		المقتمانين لمسمس	Dantiana	

* Consult factory for "daylight bright", blue/green and white LED options. Typical current draw for LED is 20ma.

8 BRACKET COLOR 1 Standard Bracket	Black 1	White 2	Gray 3	<u>Red</u> 4
Rockerguard at Lamp 1	Α	В	C	D
Rockerguard at Lamp 2	E	F	G	Н

9 ACTUATOR STYLE AND COLOR ¹

	Black	White	Gray	Red	Laser Etched
Rocker	Α	В	C	D	3
Paddla		N	V	R/I	1

10 & 11 LENS STYLE AND COLOR

Lens color for LEDs must be clear, white, or match color of LED.

0 - No Actuator Z - No Lens Clear White Amber Green Red Blue

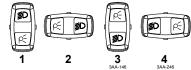
1	-	В	G	M	Т	Large Transparent
-	7	С	н	N	U	Large Translucent
3	-	D	J	Р	V	Bar Transparent
-	9	E	K	R	W	Bar Translucent
5	Α	-	-	-	-	Laser Etched background color

12 LASER ETCHED, LENS OR BODY LEGEND

00 No legend this location / no actuator For legend options & codes, visit us at carlingtech.com

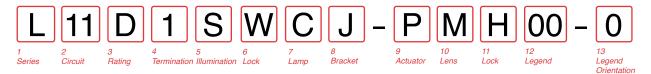
13 LEGEND ORIENTATION

- No legend (used with codes 11-18 in selection 12)
- Orientation 1 vertical, lamp 1 on top Orientation 2 horizontal, lamp 1 on right Orientation 3 vertical, lamp 1 on bottom
- Orientation 4 vertical, lamp 1 on left



14 ACTUATOR LENS LEGEND

00 No legend this location / no actuator For legend options & codes, visit us at carlingtech.com



1 SERIES

2 CIRCUIT 5 () - momentary SP - single pole - uses terminals 1, 2 & 4. Terminal Orientation DP - double pole uses terminals 5, 6 & 8. Terminals 9, 10 & 11 for lamp circuit only. Position: 1 2 & 4, 6 & 8 ON Connected Terminals 1 & 2, 5 & 6 11 14 21 OFF NONE ON NONE ON 16 17 26 27 OFF OFF ŌΝ ON (ON) (ON) (ON) 18 28 OFF CIRCUITS 302 WITH JUMPER TERMINALS (1,2&8), (4,5&6) 2, 4 & 8 (2,4&5), (1,6&8) 1, 2 & 5 OFF OFF 31² 2, 3 & 7 PROGRESSIVE CIRCUITS 51 3 & 4 2 3 3 & 4 3 & 4 1 & 2 2, 3 2, 3 2, 3 52 OFF (3 & 4) (3 & 4) (3 & 4) (3 & 4) (3 & 4) 53 54 1 & 2 (OFF) 55 (1 & 2) 56 57 2, 3 2, 3 (OFF) 3 & 4 2 & 4 3 & 4, 7 & 8 3 & 4, 7 & 8 (3 & 4), (7 & 8) (3 & 4), (7 & 8) (3 & 4), (7 & 8) (3 & 4), (7 & 8) 3 & 4, 7 & 8 2 & 4, 7 & 8 (OFF) 1 & 2 1 & 2, 5 & 6 OFF, OFF 1 & 2, 5 & 6 OFF, OFF (1 & 2), (5 & 6) (OFF, OFF) OFF, OFF OFF, OFF OFF, OFF 2, 3 2 & 3, 6 & 7 2 & 3, 6 & 7 2 & 3, 6 & 7 2 & 3, 6 & 7 2 & 3, 6 & 7 58 61 62 63 64 65 2 & 3, 6 & 7 2 & 3, 6 & 7 2 & 4, OFF 67 68 69 2 & 4, 1, 7 & 8 2 & 4, OFF 2 & 4, 1, 7 & 8 (2 & 4), (7 & 8) (2&4), (7 & 8) 2 & 4, 7 & 8 (2 & 4), (7 & 8) 2 & 4, 6 & 8 70 71 72 2 & 4, 5 & 7 2 & 4, 5 & 7 (1 & 2), (5 & 7) 1 & 2, 5 & 7

2 & 4, 5 & 7

2 & 4, OFF 2 & 4, OFF

1 & 2, 5 & 7

OFF, OFF OFF, 5 & 6

3 RATING ²

73

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

4 TERMINATION 4

- .250 (6.4mm) TAB (QC)
- .187 (4.7mm) TAB (QC)

Do not use silicone based lubricants to reduce terminal insertion forces during connector assembly, as it is detrimental to function and performance.

5 ILLUMINATION

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

Lamps Illumination Type Lamp Wired to Terminals None

12+ 11-

S #2 Independent

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

Custom colors are available. Consult factory.

Additional lamp circuits available. Consult factory.

- Available only with 3 position circuits.

 Termination 3 only available with ratings 1, B and E.

 Circuits 30, 31, 58 and 69, are not available with rating codes 4, C, D, G or H.

6 LOCK

w

Lock above terminals 10 & 9.

7 LAMP

Above terminals 12 & 11 No lamp **4** 3V Incandescent 5 6V 6 12V **7** 18V 8 24V Red Amber LED* Green 2VDC A B 6VDC м Ġ 24VDC D

**Consult factory for "daylight bright", blue/green and white LED options. Typical current draw for LED is 20ma.

8 BRACKET COLOR 1

Black

9 ACTUATOR STYLE AND COLOR 1

Black Locking Rocker Р R

10 & 11 LENS STYLE AND COLOR

Lens color for LEDs must be clear, white, or match color of LED. 0 - No Actuator Z - No Lens

White Amber Green Red

Large Transparent М В G Large Translucent Bar Transparent N Ĥ 3 Ď Ĕ 9 ĸ R Bar Translucent

11 LOCK FUNCTION AND COLOR

Locking Position Up Down Center ³ Up & Down Lock Color A B н Match Actuator S Black White CDE L M Red w Safety Orange 5

12 LASER ETCHED, LENS OR BODY LEGEND

00 No legend this location / no actuator For legend options & codes, visit us at carlingtech.com

13 LEGEND ORIENTATION

- O No legend (used with codes 11-18 in selection 12)
- No legend (used with codes 11-18 in select Orientation 1 vertical, lamp 1 on top Orientation 2 horizontal, lamp 1 on right Orientation 3 vertical, lamp 1 on bottom Orientation 4 vertical, lamp 1 on left



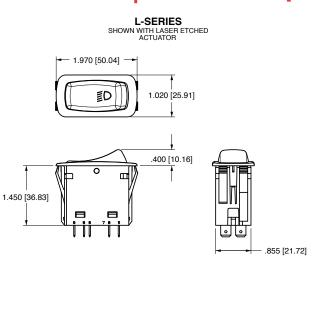


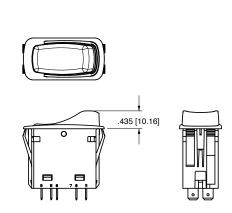


4

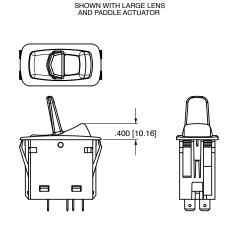
2 PZAY2-1 PZAY2-2 3

Dimensional Specifications: in. [mm]



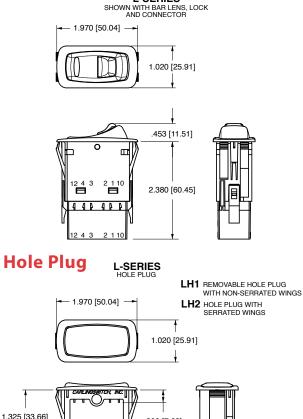


L-SERIES SHOWN WITH ROCKER GUARD

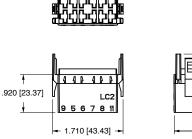


L-SERIES CONNECTOR

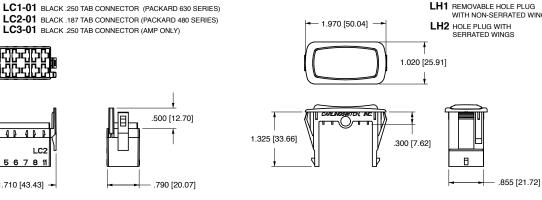
L-SERIES



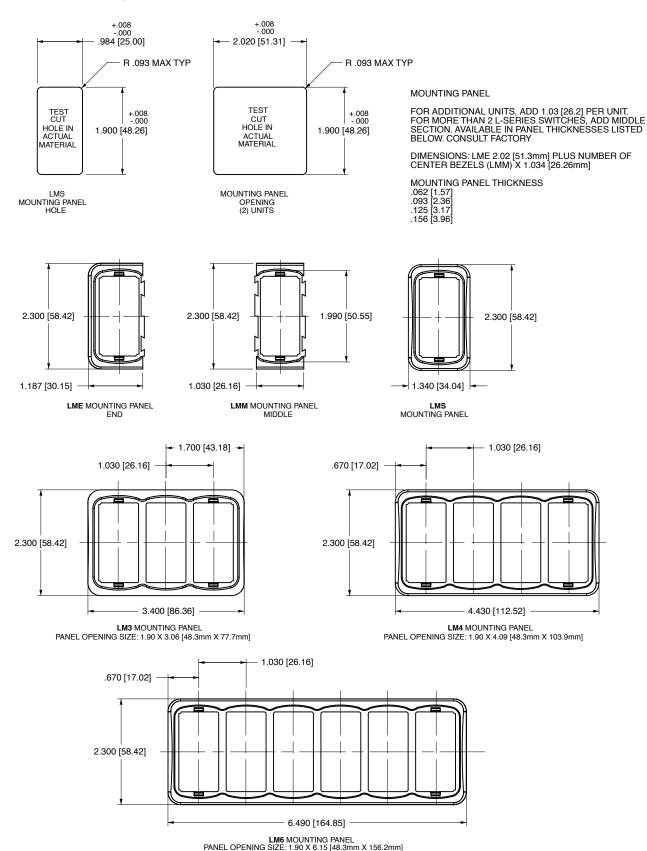
L-SERIES



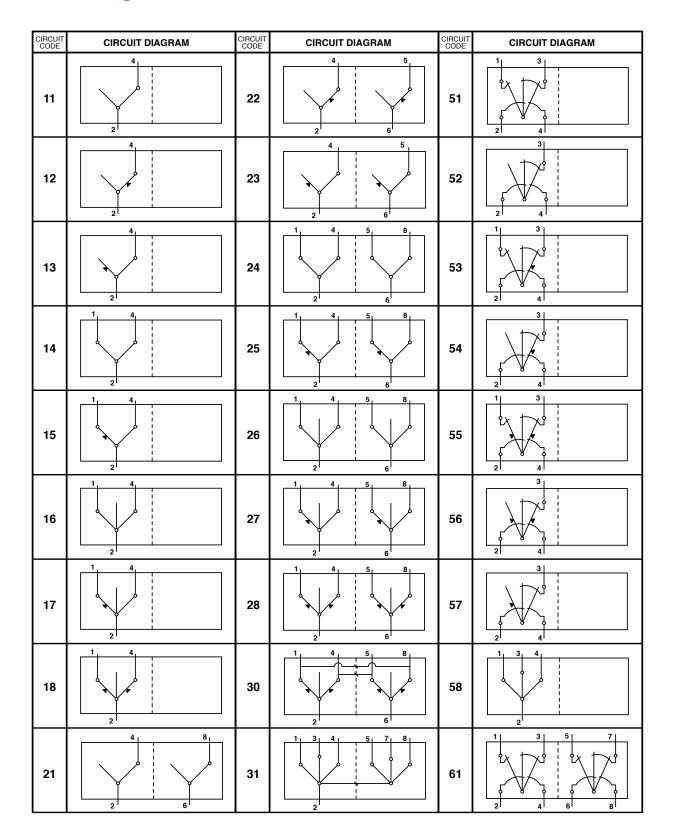
Connector



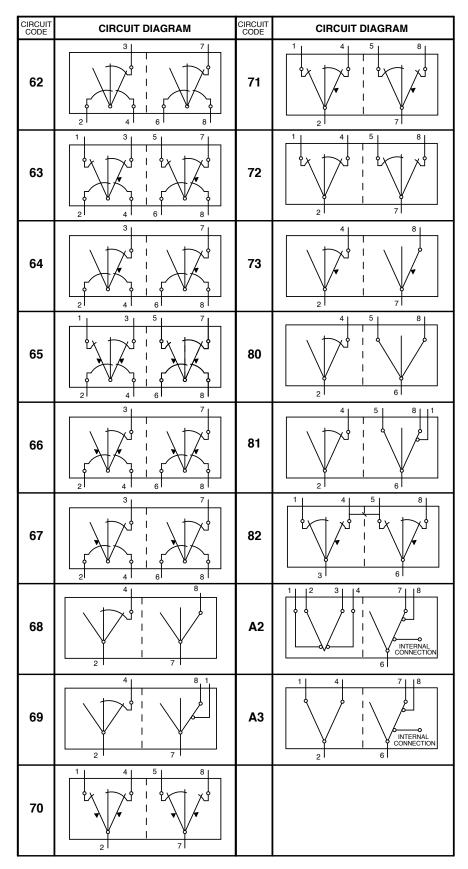
Dimensional Specifications: in. [mm]



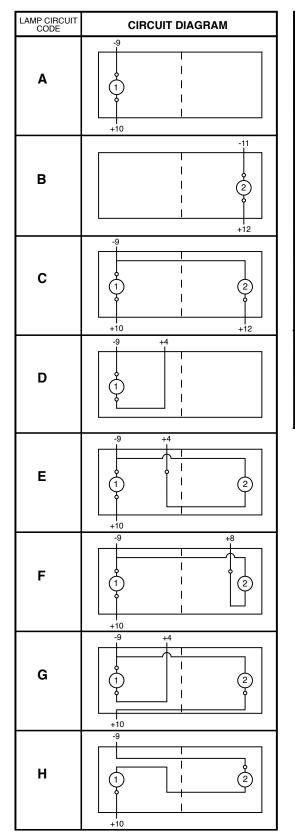
Circuit Diagrams:

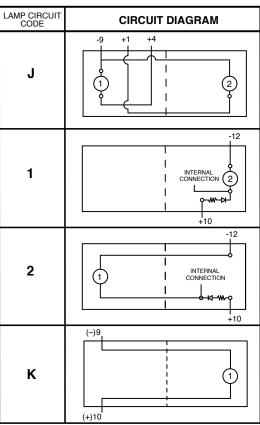


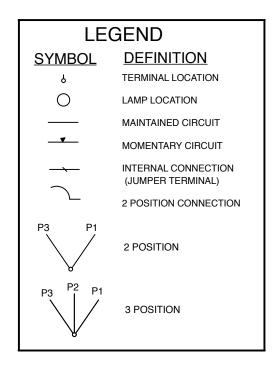
Circuit Diagrams:



Lamp Circuit Diagrams:







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Founded in 1920, Carling Technologies is a leading manufacturer of electrical and electronic switches and assemblies, circuit breakers, electronic controls, power distribution units, and multiplexed power distribution systems. With four ISO9001 and IATF16949 registered manufacturing facilities and technical sales offices worldwide, Carling Technologies Sales, Service and Engineering teams do much more than manufacture electrical components, they engineer powerful solutions! To learn more about Carling please visit www.carlingtech.com/company-profile.

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HB130CHNWWNAAC 1251.0303 AE205J60V3B004 RH110C2NBB 1352.0107 1363.0201 AML25GBF2AA03GR 1571099-3 1571987-4 1571987-5 1571989-7 B123J77V7B2 B226J50W4Q22P B433J37ZQ22M 160212E 1801.1164 1831.1102 1833.3402 1837.1118