

Switches and Controls

Rocker, Toggle,
Pushbutton
& Rotary



Carling Technologies™
Innovative Designs. Powerful Solutions.

Transforming Customer Needs into Customer Solutions

At Carling Technologies, we do much more than manufacture electrical components. We engineer powerful solutions. Working closely with your product team, we can tailor switching and circuit protection solutions that meet your application needs — cost effectively.

Since our founding in 1920, there are few products we haven't turned on, fewer industries that haven't turned to us. With five ISO registered manufacturing locations and technical sales offices worldwide, Carling Technologies now ranks among the world's largest privately owned manufacturers of hydraulic/magnetic circuit breakers, thermal circuit protectors, electrical switches and assemblies, power distribution centers and electronic control systems. What makes all our switches and controls especially attractive is their superior performance and reliability — both hallmarks of Carling Technologies.

We have over 2000 employees working through offices and manufacturing sites across the globe, providing engineered solutions to leading electronic and industrial OEMs in a variety of industries, including:

- Electronics (telecom, medical, computers, office automation)
- Transportation (on/off road vehicles, trucks, buses, boats)
- Commercial Facilities Control
- Industrial Controls
- Appliances
- Factory Automation

We look forward to helping you create safe, reliable products that exceed the tough demands of today's applications. You'll find our commitment to excellence consistently delivers "Quality by Design," our company's mission.



Our commitment to quality products begins with our investment in research and development. Not only does Carling have a team of highly-qualified engineers on staff, we equip them with the industry's most advanced computer-aided design tools.

Our engineering team will work closely with yours to advance your project from initial product concepts to final design and manufacturing. Using industry-leading CAD/CAM software, Carling engineers can evaluate multiple design alternatives as well as develop products, tooling and manufacturing processes concurrently. The result? Functionally superior, aesthetically pleasing products — produced faster and at a lower cost.



We can even share electronic files that can be easily incorporated into the rest of your design. Just one more reason you'll think of Carling as much more than an approved vendor, but rather as a proven partner.

Our automated call center system ensures that your calls are routed to the right Customer Care person for prompt attention. Our customer care personnel are technically trained to discuss your requirements and provide the advice and services you expect from Carling Technologies. Each member of the Carling Customer Care team is technically trained on our standard products, and Application Engineers are also available to answer your more advanced technical questions. In addition, Carling is proud to offer a global network of fully trained representatives and distributors, who are always ready to service you.

Carling Technologies' Products

Within this catalog, you'll find a comprehensive line of switches and controls, including rocker, toggle, pushbutton, rotary, and sealed switches, and electronic controls. We also offer hydraulic/magnetic and ground fault circuit breakers, thermal circuit protectors, digital switching systems and power distribution centers. For more information on our other products, please request one of the catalogs listed on the inside back cover of this catalog, or go to:

www.carlingtech.com.

How To Use This Catalog

Please refer to the Contents, located on this page, and the Product Selector Guide, located on pages 2 and 3, for the type of switch or control required. Each switch or control Series is located under an alphabetical code. Each code refers you to the specific pages covering an individual Series. Product features/specifications and dimensional drawings are provided to assist you with product selection.

Follow our easy step-by-step catalog number sequence to construct the switch or control, which meets your needs. An ordering format and an example for constructing a catalog number are provided for each Series.

www.carlingtech.com

Our website also offers a fast and easy way for you to configure part numbers and check stock on-line for your switch and control needs. Our on-line product selector will guide you to a valid Series based on your requirements, and the on-line product configurator will help you build a valid part number. A stock check feature is also included at www.carlingtech.com. Product Selector, Configurit, Product pages & PDF files make the Carling Technologies web site your "one stop shop" for quick and thorough product information.

Customer Care Center

For additional application assistance, we urge you to consult with our experienced staff in our Customer Care Center. Our Technical and Engineering staff has extensive test, research and development capabilities, and have assisted many customers in solving unique design and application problems with standard or customized products. Please refer to our location listing on the back of this catalog, for contact information for your area.

We look forward to working with you.

The range of temperatures that switches can perform at may be effected by various factors, including current load, voltage, foreign contaminants, environmental conditions, frequency of operation, etc. As a result, switches should be tested for suitability under actual application conditions, before making a final product selection. Operating temperature is defined as the temperature of the switch at rated current plus ambient temperature.

The product information published in this catalog is subject to change without notice. Modification of material, finishes, technical specifications and agency approvals may occur as part of our continual pursuit of product enhancement. All statements, technical information and recommendations are based on facts and tests we believe to be reliable. The product described may be used in a variety of applications. Since the user's product information, specific use application, and conditions of use are all outside of Carling's control, IT IS THE RESPONSIBILITY OF THE PURCHASER TO DETERMINE THE SUITABILITY OF THESE PRODUCTS FOR THE PURCHASER'S SPECIFIC USE AND THE PURCHASER ASSUMES ALL ASSOCIATED RISKS. The purchaser should review applicable codes and standards such as UL, NEMA, CSA, VDE, OSHA and others for recommended practices and safety standards along with electrical ratings as marked on product to ensure compatibility of product performance to application requirements.

Warranty Policy Carling Technologies, Inc. (Seller) warrants that goods sold hereunder shall be free of defects in material and workmanship for one year from date of shipment. In the event of such defects, the Seller's only obligation shall be the replacement or the cost of the defective goods, themselves, excluding, without limitation, labor costs, which are or may be required in connection with the replacement or reinstallation of the goods. This warranty is the Seller's sole obligation and excludes all other remedies or warranties, express or implied, including warranties of merchantability and fitness for a particular purpose, whether or not purposes or specifications are described herein. This Warranty expressly excludes any and all incidental, special and/or consequential damages of any nature. Seller further disclaims any responsibility for injury to person or damage to or loss of property or value caused by any product which has been subjected to misuse, negligence, or accident; or misapplied, or modified or repaired by a person or persons not authorized by the Seller or which have been improperly installed.

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MINIATURE ROCKER					
Series					
Poles single double	• •	• •	• •	• •	• •
Ratings	dry circuit to 20A 125VAC 15A 250VAC	dry circuit to 12A 125VAC 10A 250VAC	dry circuit to 16A 125VAC 10A 250VAC	dry circuit to 20A 125VAC 15A 250VAC	dry circuit to 20A 125VAC 10A 250VAC
Actuator rocker lever paddle plunger toggle (bat)	• •	• •	•	• •	• • • • •
Mounting hole Specifications snap-in mount	.480" x 1.072" 12.19mm x 27.23mm •	.508" x .756" 12.9mm x 19.2mm •	.508" x .756" 12.9mm x 19.2mm •	.866" x 1.182" 22mm x 30mm •	.550" x 1.125" ¹ 13.97mm x 28.57mm •
Termination .187 tab solder lug .250 tabs wire leads PC terms	• • • • •	• • • • •	• •	• •	• • • • •
Illumination incandescent LED neon	• •		• • •	• •	• • •
Approvals	UL, CSA, VDE	UL, CSA, VDE	UL, CSA	UL, CSA, VDE	UL, CSA
See pages	4-5	6,8	9	10-11	12-16




¹ Double pole TG/LTG mounting hole is 1.00" x 1.125" (25.4mm x 28.57mm)

SEALED ROCKER		ROCKER		ROTARY	
Series					
Poles single double	• •	• •	(3 pole also available) • •	•	•
Ratings	dry circuit to 15A 24VDC 15A 125VAC 10A 250VAC	dry circuit to 15A 125VAC 10A 250VAC	dry circuit to 20A 125VAC 26A 250VAC	up to 3A 125VAC 1.5A 250VAC 5A 12VDC	up to 6A 125VAC 3A 250VAC
Actuator rocker paddle rotary	• • •	• • •	• • •	•	•
Mounting hole Specifications snap-in mount bushing mount screw mount	1.450" x .830" 36.83mm x 21.08mm •	1.734" x .867" 44mm x 22mm •	1.450" x .830" 36.83mm x 21.08mm •	.375" dia 9.52mm-bushing .500" dia 12.7mm-snap-in •	.500" dia 12.7mm •
Termination .187 tab solder lug .250 tabs screw terminals wire leads	• • • • •	• • • • •	• • • • •	•	• • •
Sealing	•	•	•		
Illumination incandescent LED neon	• • •	• •	• •		
Approvals	UL, CSA, VDE		UL, CSA, VDE	UL, CSA	UL, CSA
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For VP-Series Illuminated Indicators, see page 58.

TOGGLE						
Series	C/D	F/G/H/I	DK/EK	110	MAAOA/215	LT
						
Poles single double	• •	(3 & 4 Pole also available) • •	• •	• •	• •	• •
Ratings	up to 20A 125VAC 10A 250VAC	dry circuit to 20A 125VAC 20A 277VAC	up to 20A 125VAC/DC 10A 250VAC/DC	up to 6A 125VAC/DC 3A 250VAC/DC	up to 20A 125VAC 10A 250VAC 1/2HP 125-250VAC	dry circuit to 15A 125VAC 10A 250VAC
Actuator paddle toggle (bat) toggle (ball)	• • •	• • •	• • •	• • •	• • •	• • •
Mounting hole Specifications snap-in mount bushing mount	.500" dia 12.7mm •	.500" dia 12.7mm •	.500" dia 12.7mm •	.500" dia 12.7mm •	.656" x 1.218" 16.66mm x 30.54mm •	.5" dia 12.7mm •
Termination .187 tab solder lug .250 tabs screw terminals wire leads PC terms	• • • • •	• • • • •	• • • • •	• • • • •	• • • • •	• • • • •
Sealing	•	•	•	•	•	•
Illumination incandescent neon						• •
Approvals	UL, CSA	UL, CSA, VDE	UL, CSA	UL, CSA	UL, CSA	
See pages	28-29	25-27	31	30	32	24

PUSHBUTTON					
Series	641/110	P/PP	16-3P	170/172	P26/P27
					
Poles single double	• •	• •	• •	• •	• •
Ratings	up to 10A 125VAC 5A 250VAC	dry circuit to 20A 125VAC 15A 250VAC	up to 3A 125VAC	up to 15A 125VAC 10A 250VAC	dry circuit to 6A 125VAC 3A 250VAC
Mounting hole Specifications bushing mount	.500" dia 12.7mm •	.500" dia 12.7mm •	.500" dia 12.7mm •	.500" dia 12.7mm •	.500" dia 12.7mm •
Termination solder lug .250 tabs screw terminals wire leads PC terms	• • • • •	• • • • •	• • • • •	• • • • •	• • • • •
Approvals	UL, CSA	UL, CSA, TUV	UL, CSA	UL, CSA	UL, CSA
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CONTROLS			
Series	LD Dimmer	LW Wiper	LMR Mirror
			
Poles multi-function	•	•	•
Ratings	up to 10A 12VDC 5A 24VDC	up to 8A 12VDC 4A 24VDC	up to 1A 12VDC .5A 24VDC
Actuator joystick rocker paddle	• • •	• • •	• • •
Mounting	.867" x 1.734" 22mm x 44mm, snap-in mount		
Termination .187 tab .250 tabs wire leads	• • •	• • •	• • •
Sealing	•	•	•
Illumination LED	•	•	•
See pages	70	73	72

Curvette R/RSC-Series Single Pole Rocker and Paddle Switches



Since its introduction, the Curvette switch has become the barometer for versatility and performance in the miniature switch market. Self cleaning contacts, International approvals, along with a wide variety of circuits, ratings, and actuator options makes the Curvette the switch of choice for many markets including Appliance, HVAC, Office Lighting, Transportation, Commercial Food and Lawn and Garden.

Dielectric Strength

UL/CSA:

1000V - live to dead metal parts

VDE:

4000V - live to dead metal parts;

750V - across open contacts

Electrical Life

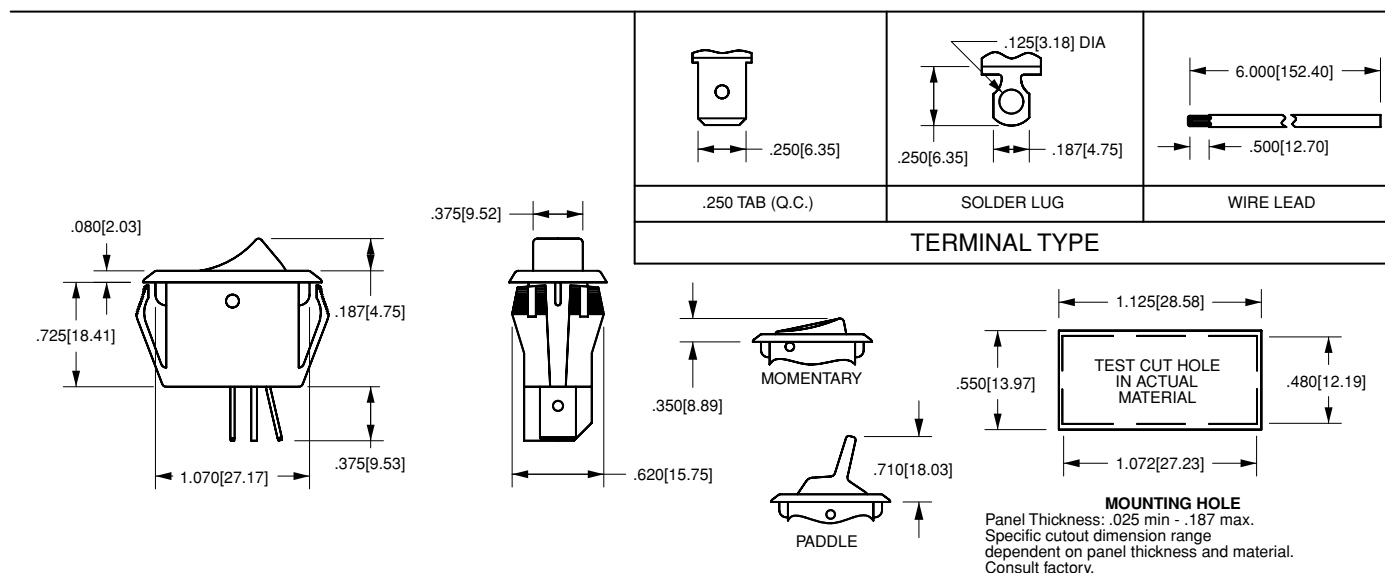
100,000 cycles

Mechanical Life

100,000 cycles

Operating Temperature

32°F to 185°F (0°C to 85°C)



RA901 - V B - B - 9 - V

1 Base Part Number 2 Actuator Style 3 Actuator Color 4 Bezel Color/Style 5 Rocker Legend 6 Visi-Rocker End/Legend Color

1 BASE PART NUMBER: SERIES/CIRCUITRY/RATING/TERMINATION

10A 250 VAC; 16A 125 VAC; 3/4 HP 125-250 VAC; 10(4) A 250 VACu T85

	Solder Lugs	.250 Tabs	Wire Leads
OFF-NONE-ON	RA900	RA901	RA905
ON-NONE-ON	RB900	RB901	RB905
ON-OFF-ON ³	RC910	RC911	RC915
OFF-NONE-(ON) ²	RD220	RD221	RD225

15A 250 VAC; 20A 125 VAC; 3/4 HP 125-250 VAC

	Solder Lugs	.250 Tabs
OFF-NONE-ON	RSCA200	RSCA201
ON-NONE-ON	RSCB200	RSCB201

2 ACTUATOR STYLE

M	momentary rocker	R	rocker
P	paddle	V	visi-rocker (2 color)

3 ACTUATOR COLOR

B	black	W	white
---	-------	---	-------

4 BEZEL COLOR/STYLE

STANDARD

B	black
W	white



OVAL

1	black
2	white



5 ROCKER LEGEND

	molded in	hot stamp
NO LEGEND	0	0
OFF-ON vertical	1	A
OFF-ON horizontal	2	B
I-O horizontal	8	D
I-O vertical	9	F
dual OFF-ON I-O	-	H

6 VISI-ROCKER END/LEGEND COLOR

N	n/a
B	black
V	visi-red
W	white

NOTES

PC Terminals also available, consult factory for details.

1 For additional ratings, consult factory.

2 Rating is 8A 250 VAC, 12A 125 VAC, 1/2 HP 125-250 VAC, and must specify M actuator style.

3 Not rated at 3/4 HP 125-250 VAC

() indicates momentary function.

Curvette LRA-Series Single Pole Lighted Rocker & Paddle Switches



Since its introduction, the Curvette switch has become the barometer for versatility and performance in the miniature switch market. This lighted version features the very same self cleaning contacts, International approvals, along with a wide variety of circuits, ratings, and actuator options makes the Curvette the switch of choice for sundry other markets including HVAC, Office Lighting, Transportation, Commercial Food and Lawn and Garden.

Dielectric Strength

UL/CSA:
1000V-live to dead metal parts
VDE:
4000V - live to dead metal parts;
750V - across open contacts

Electrical Life

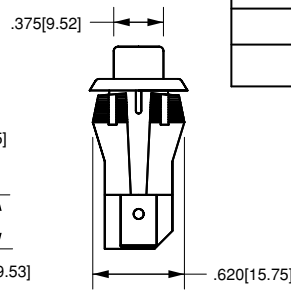
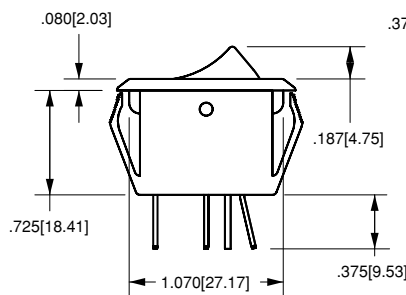
100,000 cycles

Mechanical Life

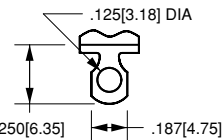
100,000 cycles

Operating Temperature

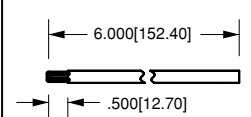
32°F to 185°F (0°C to 85°C)



.250 TAB (Q.C.)

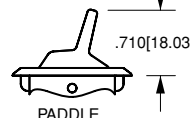


SOLDER LUG

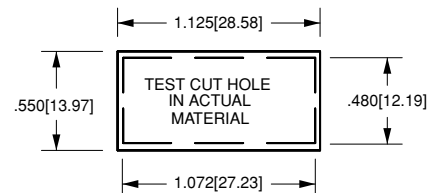


WIRE LEAD

TERMINAL TYPE



PADDLE



MOUNTING HOLE

Panel Thickness: .025 min. - .187 max.
Specific cutout dimension range
dependent on panel thickness and material.
Consult factory.

LRA911 - R S - B / 250N

1
Base Part Number

2
Actuator
Style

3
Actuator
Color

4
Bezel
Color/Style

5
Lamp Voltage

1 BASE PART NUMBER: SERIES/CIRCUITRY/RATING²/TERMINATION

125 neon lamp (use 125N in Selection 5 Lamp Voltage)

10A 250VAC; 16A 125VAC; 10(4)A 125VACu

	Solder Lugs	.250 Tabs	Wire Leads
OFF-NONE-ON	LRA210	LRA211	LRA215

250 neon lamp (select 250N in selection 5 Lamp Voltage)

15A 250 VAC; 10A 250VAC; 16A 125vAC; 10(4)A 250 T85

	Solder Lugs	.250 Tabs	Wire Leads
OFF-NONE-ON	LRA910	LRA911	LRA915

Incandescent lamp (select 006V-024V in selection 5 Lamp Voltage)

10A 30V

	Solder Lugs	.250 Tabs	Wire Leads
OFF-NONE-ON	LRA510	LRA511	LRA515

2 ACTUATOR STYLE

P paddle
R rocker translucent
C rocker clear

3 ACTUATOR COLOR

translucent
A amber
C white
P yellow
S red
W pale red

clear

A amber
C clear
G' green
B' blue
R red

4 BEZEL COLOR/STYLE

STANDARD

B black
W white



OVAL

1 black
2 white



5 LAMP VOLTAGE

006V 6 volts incandescent

012V 12 volts incandescent

018V 18 volts incandescent

024V 24 volts incandescent

125N¹ 125 volts neon

250N¹ 250 volts neon

NOTES

LED illumination, PC terminals, independent lamps, and additional color options are available. Consult factory.

1 Neon lamps not available with blue or green actuators.

2 Consult factory for additional ratings.

651/652-Series Sub-Miniature Rocker Switches



This sub-miniature switch is ideal for applications with back panel size constraints. It fits in a standard rectangular cutout & is designed to provide ease of insertion along with superior panel retention qualities. A high profile rocker & butt-action contacts provide the user with a crisp positive-type feel & electrical ratings to 12A 125VAC 10A 250VAC. A variety of ratings, circuitry & termination choices will appeal to many market segments including Handheld Appliance, Power Supplies, Audio-Visual & Telecom.

Dielectric Strength

UL/CSA:

1000V-live to dead metal parts

Electrical Life

100,000 cycles- maintained

50,000 cycles- momentary

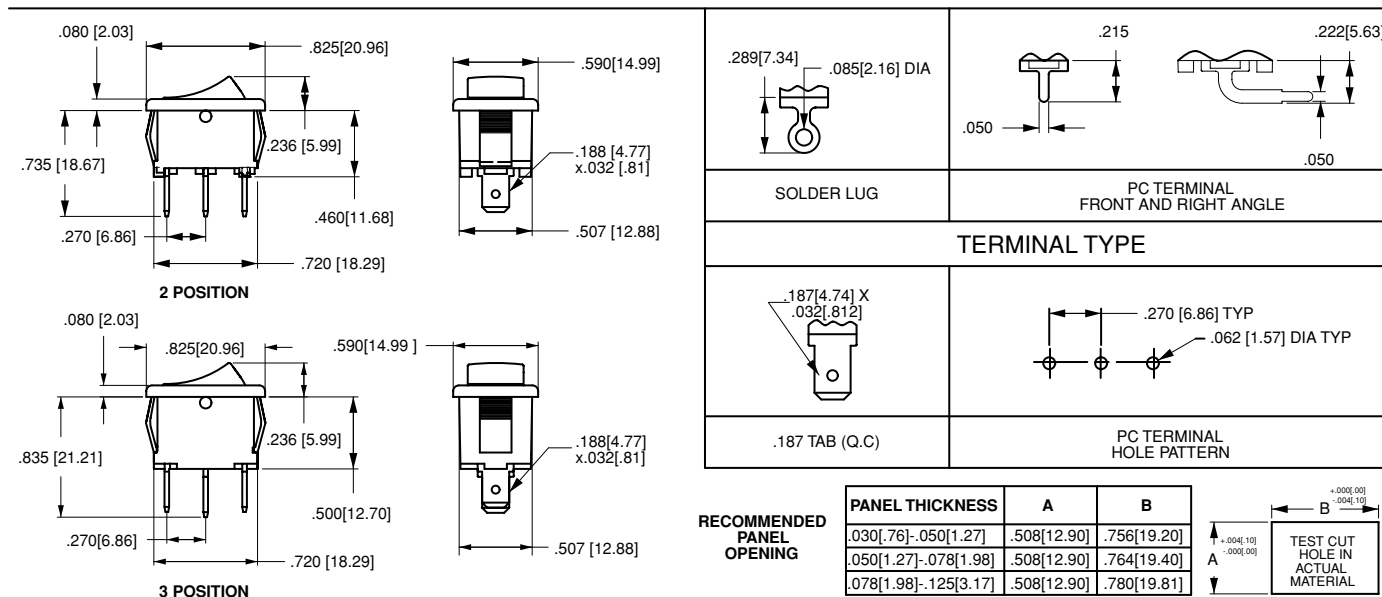
50,000 cycles- T-rating

Mechanical Life

100,000 cycles

Operating Temperature

32°F to 185°F (0°C to 85°C)



651 **122** - **B** **B** - **A** **N**

1
Series

2
Circuit/Rating/Termination

3
Actuator
Color

4
Base Color

5
Legend

6
Visi-Rocker End/
Legend Color

1 SERIES

651 Matte Finish **652** Gloss Finish

2 CIRCUITRY/RATING/TERMINATION

10A 250VAC, 10A 125VAC, 1/4 HP, 125-250 VAC

	.187 Solder Lugs	.187 Tabs	PC Terms	PC Rt. Angle	Wire Leads
ON-NONE-OFF	121	122	123	124	125
(ON)-NONE-OFF	261 ¹	262	263	264	265
ON-NONE-(OFF)	361 ¹	362	363	364	365
ON-NONE-ON	421	422	423	424	425
ON-NONE-(ON)	561 ¹	562	563	564	565
ON-OFF-ON	681 ²	682	683	684	686
ON-OFF-(ON)	781 ²	782	783	784	785
(ON)-OFF-(ON)	881 ²	882	883	884	885

3 ACTUATOR COLOR³

B black **W** white

4 BASE COLOR³

B black **W** white

5 ROCKER LEGEND

	molded in ⁴	hot stamp
NO LEGEND	0	0
OFF-ON vertical	1	A
OFF-ON horizontal	—	B
I-O horizontal	8	D
I-O vertical	9	E
O on rocker end	—	F
II-O-I vertical	—	G
II-O-I horizontal	—	H

6 VISI-ROCKER END/LEGEND COLOR

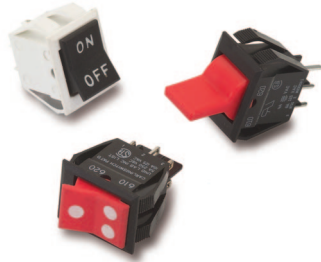
N n/a
B black
V visi-red
W white

NOTES

Additional ratings (including 14V T) & color options are available; Consult factory.

- Rated 12A 125VAC, 6A 250 VAC, 1/4HP 125-250VAC.
- Rated 8A 125-250VAC, 1/4HP 125-250VAC.
- Additional colors available. Consult factory for details.
- Available with Visi-Rocker option only.
- () Indicates momentary function.

610/620-Series Miniature Rocker Switches



The miniature 610/620-Series switches are double insulated and available in single or double pole configurations. These snap-in mounted switches are offered with either a paddle or rocker actuator and with ratings up to 8 amps. Applications include: Handheld Appliance, Power Supplies, Audio-Visual, Telecom, and Computers.

Dielectric Strength

UL/CSA:

1000V - live to dead metal parts & opposite polarity

Electrical Life

50,000 cycles- single pole

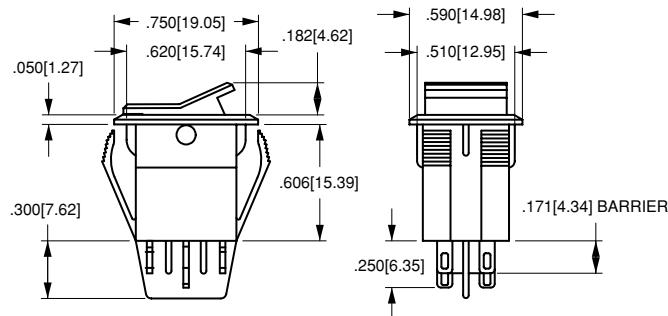
50,000 cycles- double pole

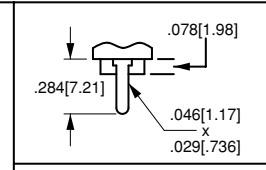
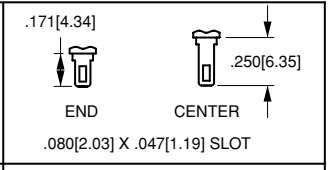
Mechanical Life

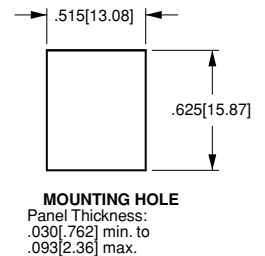
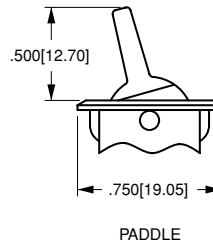
100,000 cycles

Operating Temperature

32°F to 185°F (0°C to 85°C)



 <p>.078[1.98] .284[7.21] .046[1.17] .029[.736]</p>	 <p>.171[4.34] .250[6.35] .080[2.03] X .047[1.19] SLOT</p>
PC TERMINAL	.080 SOLDER LUG
TERMINAL TYPE	



62012421

¹
Base Part Number

0 - 0

²
Terminal
Sealing

³
Legend

1 BASE PART NUMBER: SERIES/CIRCUITRY/RATING¹/TERMINATION¹

4A 250VAC; 8A 125VAC

Single Pole

ON-NONE-ON	Solder Lugs 62011421	PC Term 62011422
ON-NONE-(ON)	62011431	62011432
ON-OFF-ON	62011461	62011462
ON-OFF-(ON)	62011471	62011472
(ON)-OFF-(ON)	62011481	62011482

Double Pole

ON-NONE-ON	62012421	62012422
ON-NONE-(ON)	62012431	62012432
ON-OFF-ON	62012461	62012462
ON-OFF-(ON)	62012471	62012472
(ON)-OFF-(ON)	62012481	62012482

2 TERMINAL SEALING

0	none
E	epoxy sealed terminals

3 LEGEND

NO LEGEND	hot stamp 0
ON-OFF vertical	A
ON-OFF horizontal	B
I-O horizontal	D
I-O vertical	G

NOTES

1 Base part number specifies black rocker and bezel. To specify paddle actuator, change 2nd digit of part number from 2 to 1 (ex. 61012421) For additional ratings and colors, consult factory.
() indicates momentary function.

611/621-Series Single/Double Pole Rocker & Paddle Switches



The patriarch of the Carling line of sub-miniature switches has its roots deep in the Appliance, Audio Visual, Power Supply, and Telecom markets. The 611/621-Series compact size, sleek styling, actuator and termination choices make this switch a cost effective solution to most any switching need. International approvals, single or double pole circuitry, and ratings to 11A 125VAC further the broad appeal of this product family.

Dielectric Strength

UL/CSA: 1000V - live to dead metal parts & opposite polarity
VDE: 4000V - live to dead metal parts; 1250V - opposite polarity & across open contacts

Electrical Life

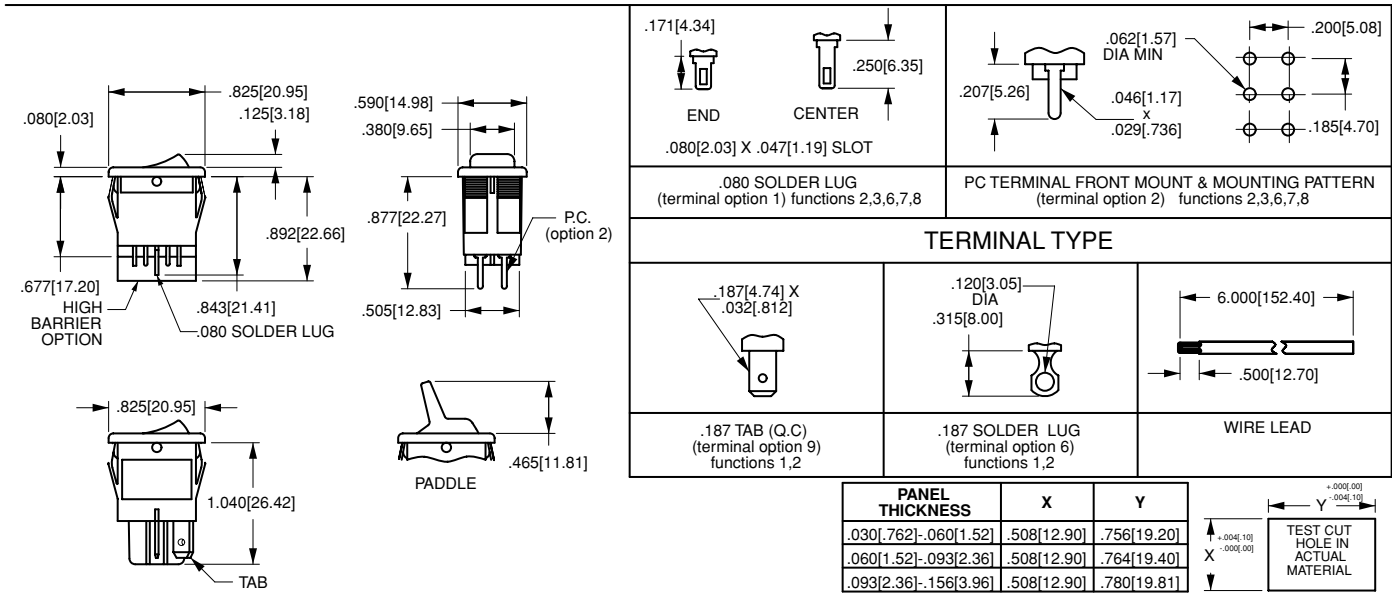
50,000 cycles- single pole
50,000 cycles- double pole

Mechanical Life

100,000 cycles

Operating Temperature

32°F to 185°F (0°C to 85°C)



62116919 - 0 - 9 - V

1 Base Part Number¹

2 Epoxy Sealing

3 Rocker Legend

4 Visi-Rocker End Color

1 BASE PART NUMBER: SERIES/CIRCUITRY/RATING²/TERMINATION

	187 Tabs ⁴	.080 Solder Lugs	PC Terms	Wire Leads	PC Frt. Mount	PC Back Mount	.187 Solder Lugs
Single Pole; 4A 250VAC; 8A 125VAC; 6(4) A 250V⁴							
ON-NONE-OFF	62116919	-	-	62111914	621111918 ⁶	62111917 ⁶	62111916
ON-NONE-ON	62116929	62116421	62111422	62111924	621111828 ⁶	62111927 ⁶	62111926
ON-OFF-ON ³	-	62111461	62111462	62111263 ⁷	-	-	-
ON-NONE-(ON) ³	-	62111431	62111432	62111233 ⁷	-	-	-
ON-OFF-(ON) ³	-	62111471	62111472	62111273 ⁷	-	-	-
(ON)-OFF-(ON) ³	-	62111481	62111482	62111283 ⁷	-	-	-
Double Pole; 4A 250VAC; 8A 125VAC; 6(4) A 250V⁴							
ON-NONE-OFF	62115919	-	-	62112914	621122918 ⁶	62112917 ⁶	62112916
ON-NONE-ON	62115929	62115420	62112422	62112924	621122928 ⁶	62112927 ⁶	62112926
ON-OFF-ON ³	-	62112461	62112462	62112263 ⁷	-	-	-
ON-NONE-(ON) ³	-	62112431	62112432	62112233 ⁷	-	-	-
ON-OFF-(ON) ³	-	62112471	62112472	62112273 ⁷	-	-	-
(ON)-OFF-(ON) ³	-	62112481	62112482	62112283 ⁷	-	-	-

2 TERMINAL SEALING

0 none
E epoxy sealed terminals

3 ROCKER LEGEND

	molded in ⁵	hot stamp
NO LEGEND	0	0
OFF-ON vertical	n/a	A
OFF-ON horizontal	n/a	B
I-O horizontal	8	D
I-O vertical	9	E
O on rocker radius	n/a	F (Indicates ON)

4 VISI-ROCKER END COLOR

N n/a
V visi-red
W visi-white

NOTES

- Base part number specifies black rocker with black bezel. To specify paddle actuator change 2nd digit from 2 to 1. ex.: 61115919= black paddle with black bezel. For additional ratings & colors, consult factory.
- Dry circuit rating is available, consult factory.
- Not available with 6(4) A 250 V rating or VDE approval.
- 6(4)A 250V VDE approved rating available with On-none-Off and On-none-On circuits only.
- Available with visi-rocker option only.
- Consult factory for PC footprint.
- Rated 2A 250VAC, 5A 125 VAC resistive.
- () Indicates momentary function.

622/632-Series Miniature Rocker Switches



A high powered offering packed into a compact sized envelope, the 622/632-Series is a staple of the Appliance, Food Service, Transportation, and General Purpose markets. The silver-alloy butt contacts will handle inrush spikes up to 125 amps and steady state current to 16A 125VAC. The lighted 632-Series features a multitude of illumination circuit options available with LED, incandescent and neon style lamps.

Dielectric Strength

UL/CSA: 1000V - live to dead metal parts & opposite polarity

Electrical Life

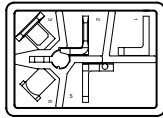
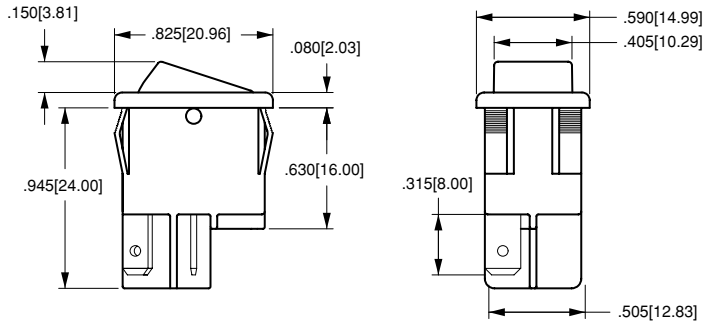
50,000 cycles

Mechanical Life

100,000 cycles

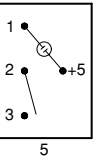
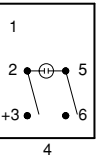
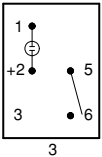
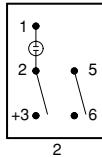
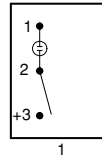
Operating Temperature

32°F to 185°F (0°C to 85°C)

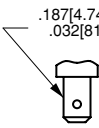
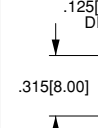


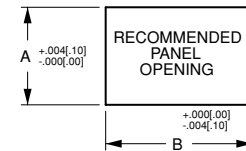
BOTTOM VIEW OF
TERMINAL ARRANGEMENT

632 SCHEMATIC



UNBALLASTED

	
.187 TAB (Q.C)	.187 SOLDER LUG
TERMINAL TYPE	



PANEL THICKNESS	A	B
.030[.76]-.050[1.27]	.508[12.90]	.756[19.20]
.050[1.27]-.078[1.98]	.508[12.90]	.764[19.40]
.078[1.98]-.125[3.17]	.508[12.90]	.780[19.81]

632121 - 1 B - K N

1 Base Part Number

2 Actuator Color*

3 Base Color

4 Lamp*

5 Legend

1 BASE PART NUMBER: SERIES/CIRCUITRY/RATING²/TERMINATION

8A 250VAC; 12A 125VAC; 1/2 HP 125-250VAC
622-SERIES NON-ILLUMINATED ROCKER

ON-NONE-OFF (Single Pole)

ON-NONE-OFF (Double Pole)

632-SERIES ILLUMINATED ROCKER

ON-NONE-OFF (Single Pole, dependent lamp) schematic 1

ON-NONE-OFF (Single Pole, independent lamp) schematic 3

ON-NONE-OFF (Single Pole, independent lamp unballasted) schematic 5

ON-NONE-OFF (Double Pole, dependent lamp w/ 5 terms.) schematic 2

ON-NONE-OFF (Double Pole, dependent lamp w/ 4 terms.) schematic 4

Solder Lugs

622121

622221

632121

632321

632521

632221

632421

.187 Tabs

622122

622222

632122

632322

632522

632222

632422

2 ACTUATOR COLOR*

622 (non illuminated)

B black

W white

632 (illuminated)

1 clear amber

2 clear red

3 clear blue³

4 clear green

5 clear

3 BASE COLOR*

B black

W white

4 LAMP VOLTAGE/STYLE*

N 622 (non illuminated)

1 unballasted LED

2 6V LED

3 12V LED

4 24V LED

A 6V incandescent

C 12V incandescent

E 18V incandescent

H 24V incandescent

J 125V neon

K 250V neon

5 ROCKER LEGEND

NO LEGEND

OFF-ON vertical

OFF-ON horizontal

I-O horizontal

I-O vertical

O on rocker radius

hot stamp

N

A

B

D

E

F

NOTES

- For all incandescent or LED lamps specify 5 in 5th digit of part number. Example 632151-1B-CN
- 10A 250VAC, 16A 125 VAC rating available for select single pole circuits, consult factory for details.
- Available with incandescent lamps only.
- Additional colors available. Consult factory for details.

Dielectric Strength

Electrical Life

50,000 cycles

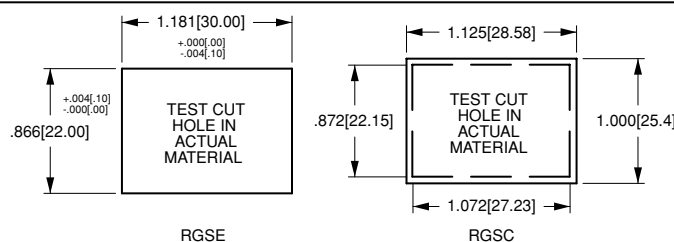
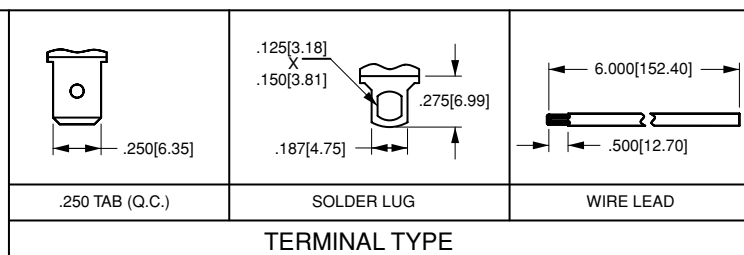
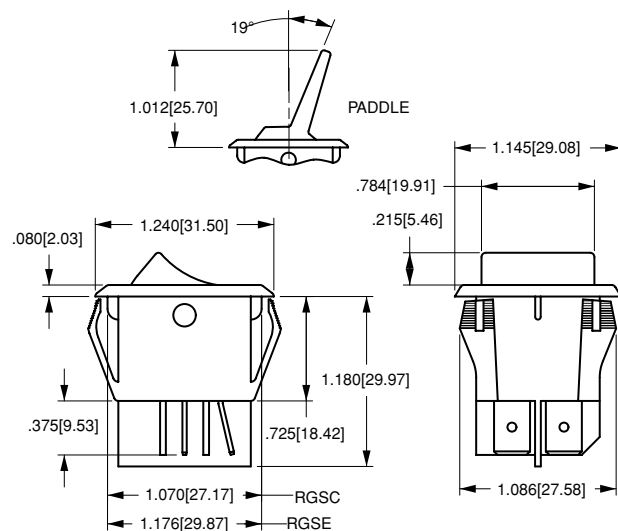
Mechanical Life

100,000 cycles
Operating Temperature

Operating Temperature
-40°F to 185°F (-40°C to 85°C)



The double pole version of the R-Series incorporates the same sleek lines as the original Curvette, in a double pole envelope. Features include silver-plated butt-action contacts which afford ratings to 20A/125, 15A 250VAC and withstand peak inrush currents up to 100 amps. Paddle or rocker actuators and a choice of solder lug, .250 Tab and wire lead terminations enable this switch to adapt to high current applications within the Power Supply, Appliance, Exercise Equipment and Music Equipment Industries.



MOUNTING HOLE
Panel Thickness: .025 min - .187 max.
Specific cutout dimension range dependent
on panel thickness and material.

RGSCA901

1
Base Part Number

2 Actuator Style

3
Actuator
Color4
Bezel
Color

5 Rocker Legend

Solder Lugs 250 Tabs Wire Leads

Standard Base

OFF-NONE ON (Single Pole)	RGSCA900	RGSCA901	RGSCA905
ON-NONE-ON (Single Pole)	RGSCB900	RGSCB901	RGSCB905
OFF-NONE-ON (Double Pole)	RGSCC900	RGSCC901	RGSCC905
ON-NONE-ON (Double Pole)	RGSCD900	RGSCD901	RGSCD905

European Base (22 x 30 mm cutout)

OFF-NONE ON (Single Pole)	RGSEA900	RGSEA901	RGSEA905
ON-NONE-ON (Single Pole)	RGSEB900	RGSEB901	RGSEB905
OFF-NONE-ON (Double Pole)	RGSEC900	RGSEC901	RGSEC905
ON-NONE-ON (Double Pole)	RGSED900	RGSED901	RGSED905

2 ACTUATOR STYLE

P paddle **R** rocker

3 ACTUATOR COLOR¹

B black **W**

4 BEZEL COLOR¹

B black **W** white

5 ROCKER LEGEND

NO LEGEND	0
OFF-ON vertical	A
OFF-ON horizontal	B
I-O horizontal	D
I-O vertical	E
DUAL OFF-ON , I-O vertical	H
DUAL OFF-ON , I-O horizontal	J

NOTES

1 Additional ratings and colors available. Consult factory.

LRG-Series Double Pole Rocker & Paddle Switches



The double pole version of the R-Series incorporates the same sleek lines as the original Curvette, in a double pole envelope. This illuminated version features silver-plated butt-action contacts with ratings to 20A/125, 15A 250VAC and withstand peak inrush currents up to 100 amps. Clear or translucent style rocker actuators and a choice of solder lug, .250 Tab and wire lead terminations enable this switch to adapt to high current applications within the Power Supply, Appliance, Exercise Equipment and Music Equipment Industries.

Dielectric Strength

UL/CSA: 1000V - live to dead metal parts & opposite polarity

Electrical Life

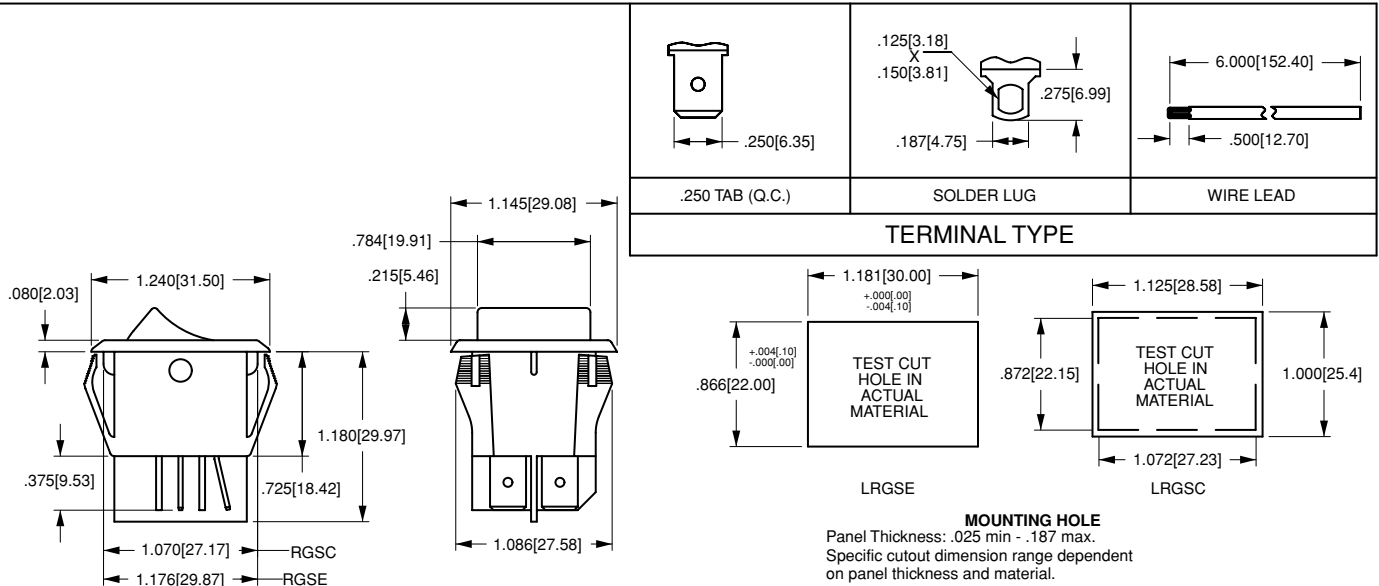
50,000 cycles

Mechanical Life

100,000 cycles

Operating Temperature

-40°F to 185°F (-40°C to 85°C)



LRGSCK611 - R S - B - B / 250N

1
Base Part Number

2
Actuator
Style

3
Actuator
Color

4
Bezel
Color/Style

5
Rocker
Legend

6
Lamp Voltage

1 BASE PART NUMBER: SERIES/CIRCUITRY/RATING/TERMINATION

15A 250 VAC, 20A 125 VAC, 3/4 HP 125-250 VAC

Solder Lugs .250 Tabs Wire Leads

Standard Base

OFF-NONE ON LRGSC610 LRGSC611 LRGSC615

European Base (22 x 30 mm cutout)

OFF-NONE ON (Single Pole) LRGSEK610 LRGSEK611 LRGSEK615

15A 6-24 V⁶

Standard Base

OFF-NONE ON LRGSC510 LRGSC511 LRGSC515

European Base (22 x 30 mm cutout)

OFF-NONE ON (Single Pole) LRGSEK510 LRGSEK511 LRGSEK515

2 ACTUATOR STYLE

R rocker (translucent) C rocker (clear)

3 ACTUATOR COLOR

A amber L³ lime green
B^{3,5} blue P yellow
C⁴ white/clear R red (clear)
G⁵ green S red
W pale red

4 BEZEL COLOR¹

B black W white

5 ROCKER LEGEND

NO LEGEND hot stamp
OFF-ON vertical A
OFF-ON horizontal B
I-O horizontal D
I-O vertical E
DUAL OFF-ON, I-O vertical H
DUAL OFF-ON, I-O horizontal J

6 LAMP VOLTAGE²

006V 6V incandescent 024V 24V incandescent
012V 12V incandescent 125N 125V neon
018V 18V incandescent 250N 250V neon

NOTES

- Additional ratings, colors and clear style actuators are available. Consult factory.
- Incandescent lamps must specify 15A 24V rating only.
- Available with incandescent lamps only.
- Clear color provided where specified with clear style rocker.
- Available with clear style rocker only.

T-Series Single Pole Rocker & Paddle Switches



The predecessor to the Curvette series whose versatility has allowed it to stand the test of time. Traditional styling coupled with self cleaning contacts, integrated wire leads, a multitude of circuits, ratings, and actuator choices has made the TA/LTA-Series appeal to a wide range of markets, including Appliance, HVAC, Food service, Transportation.

Dielectric Strength

UL/CSA:

1000V - live to dead metal parts

VDE:

4000V - live to dead metal parts;

750V - across open contacts

Electrical Life

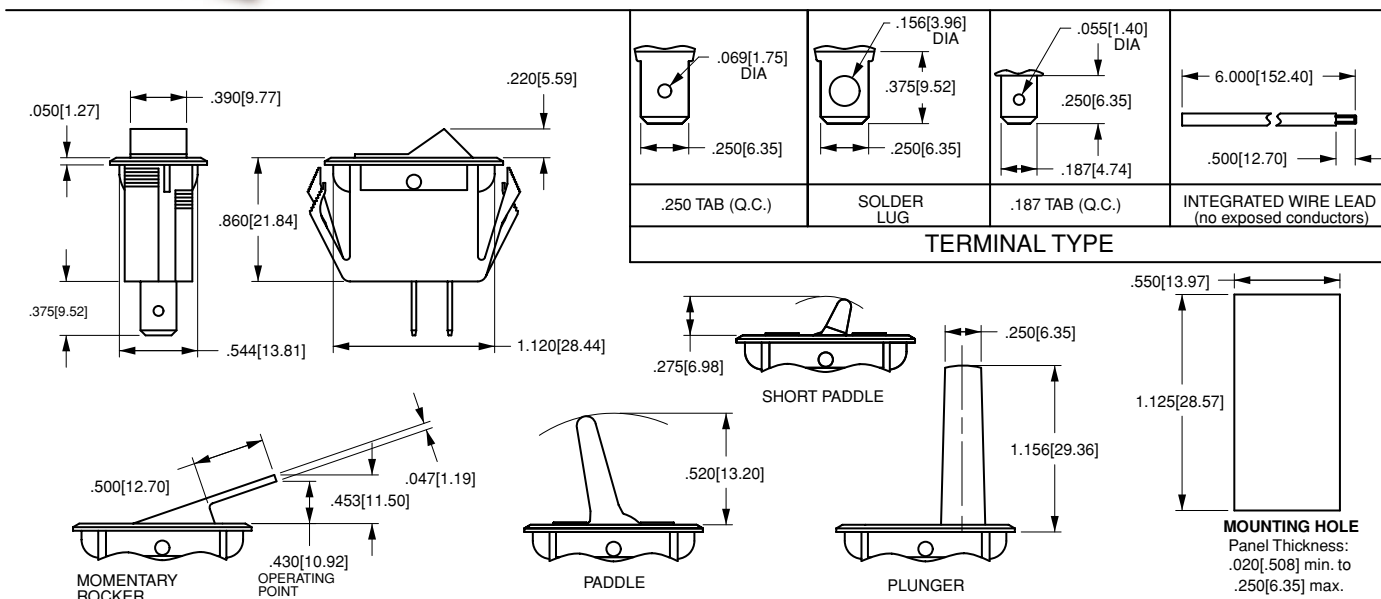
100,000 cycles

Mechanical Life

100,000 cycles

Operating Temperature

32°F to 185°F (0°C to 85°C)



TA201 - T B - B

1 Base Part Number

2 Actuator Style

3 Actuator Color

4 Bezel Color/Style

1 BASE PART NUMBER: SERIES/CIRCUITRY/RATING⁴/TERMINATION

	Solder Lugs	.250 Tabs	Wire Leads
10A 250 VAC, 15A 125 VAC, 3/4 HP 125-250 VAC			
ON-NONE-OFF	TA200	TA201	TA205
ON-NONE-ON	TB200	TB201	TB205
ON-OFF-ON	TC200	TC201	TC205
10A 250 VAC, 15A 125 VAC, 3/4 HP 125-250 VAC, 10(4) A 250VAC T85u⁶			
ON-NONE-OFF	TA800	TA801	TA805
ON-NONE-ON	TB800	TB801	TB805
ON-OFF-ON	TC800	TC801	TC805
5A 250 VAC, 10A 125 VAC, 1/2 HP 125-250 VAC			
(ON)-NONE-OFF	TA10A	TA10B	TA10F
ON-NONE-(OFF)	TA10L	TA10M	TA10T
ON-NONE-(ON)	TB10A	TB10B	TB10F

T-SERIES W/ PLUNGER ACTUATOR^{1,2}

10A 250 VAC, 16A 125 VAC, 1/2 HP 125-250 VAC			
OFF-NONE-(ON)	-	TA25B-PLB-B	TA25F-PLB-B
ON-NONE-(OFF)	-	-	TA25T-PLB-B

T-SERIES W/ MOMENTARY ROCKER ACTUATOR

10A 250 VAC, 15A 125 VAC, 20A 125-250 VAC "H", 3/4 HP 125-250 VAC			
(ON)-NONE-OFF	-	TA22B-TLB-B	-
ON-NONE-(OFF)	-	TA22M-TLB-B	-

2 ACTUATOR STYLE

T	rocker	PS	short paddle
P	paddle		

3 ACTUATOR COLOR⁵

B	black	W	white
---	-------	---	-------

4 BEZEL COLOR⁵

B	black	W	white
---	-------	---	-------

NOTES

Imprinting is available. Consult factory.

1 Optional plunger support option is available for applications requiring extensive lateral travel, consult factory for details.

2 Maintained circuit not available with TA22 and TA25 Series.

3 .187 tab terminals also available. Consult factory for catalog number callout.

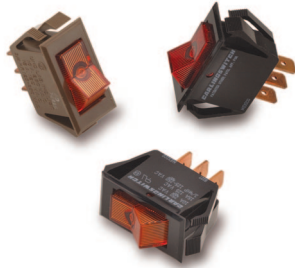
4 Additional ratings are available. Consult factory.

5 Additional colors are available. Consult factory.

6 UL, CSA & VDE Approved.

() Indicates momentary function.

LTA-Series Single Pole Lighted Rocker Switches



The illuminated predecessor to the Corvette series whose versatility has allowed it to stand the test of time. Traditional styling coupled with self cleaning contacts, integrated wire leads, a multitude of circuits, ratings, and actuator choices has made the LTA-Series appeal to a wide range of markets including Appliance, HVAC, Food service, Transportation, and sundry other markets as well.

Dielectric Strength

UL/CSA:

1000V - live to dead metal parts
750V - across open contacts

Electrical Life

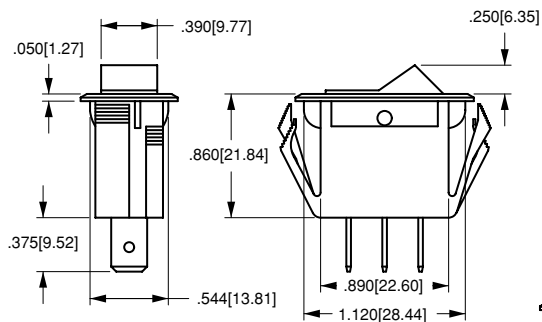
100,000 cycles

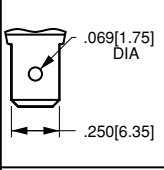
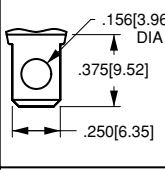
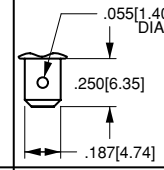
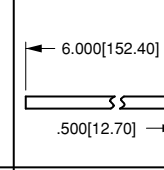
Mechanical Life

100,000 cycles

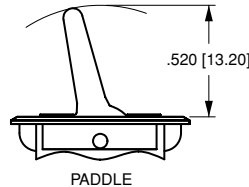
Operating Temperature

32°F to 185°F (0°C to 85°C)

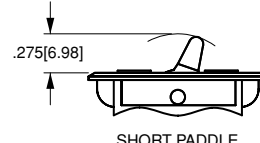


			
.069[1.75] DIA	.156[3.96] DIA	.055[1.40] DIA	
.250[6.35]	.375[9.52]	.250[6.35]	
.250[6.35]	.250[6.35]	.187[4.74]	
.250 TAB (Q.C.)	SOLDER LUG	.187 TAB (Q.C.)	INTEGRATED WIRE LEAD (no exposed conductors)

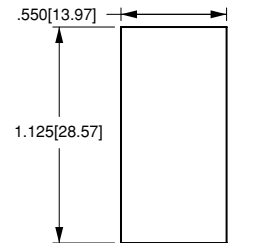
TERMINAL TYPE



PADDLE



SHORT PADDLE



MOUNTING HOLE
Panel Thickness:
.020[.508] min. to
.250[6.35] max.

LTA201 - P R - B -A 125N

1 Base Part Number

2 Actuator Style

3 Actuator Color

4 Bezel Color

5 Lens Color

6 Lamp Voltage

1 BASE PART NUMBER: SERIES/CIRCUITRY/RATING/TERMINATION

10A 250VAC; 15A 125VAC; 3/4 HP 125-250VAC

OFF-NONE-ON Solder Lugs LTA200 .250 Tabs LTA201 .187 Tabs LTA203 Wire Leads LTA205

2 ACTUATOR STYLE¹

T rocker PS short paddle
P paddle

3 ACTUATOR COLOR¹

A amber R red
C clear G green²

4 BEZEL COLOR¹

B black W white

5 LENS COLOR^{2,3}

/ no lens -G green
-A amber -R red
-C clear -LU blue

6 LAMP VOLTAGE²

006V 6V incandescent 024V 24V incandescent
012V 12V incandescent 125N 125V neon
018V 18V incandescent 250N 250V neon

NOTES

- Additional ratings and colors are available. Consult factory for details.
- Neon lamps not recommended with green or blue rocker/lenses.
- Lens color is specified only if actuator style is P or PS. If style is T (rocker), then use / as the code in position 5.

TG/LTG-Series Rocker Switches



The TG-Series Mini Tippet rocker switches are single or double pole and feature an all nylon double-insulated construction. These switches are designed with snap-in mounting for fast, low cost assembly. The illuminated version (LTG) is available with either a paddle or rocker actuator. These AC rated switches are also suitable for low-voltage DC applications in a wide range of markets including Appliance, HVAC, Food service, and Transportation.

Dielectric Strength

UL/CSA:

1000V - live to dead metal parts

Electrical Life

50,000 cycles- maintained

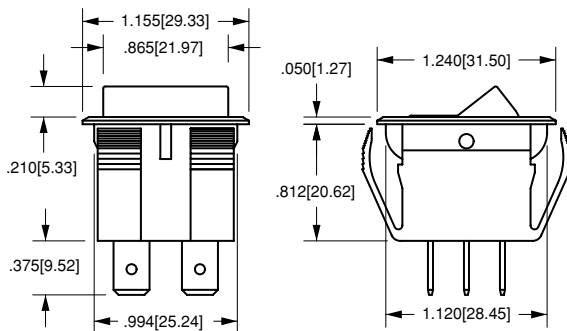
25,000 cycles- momentary

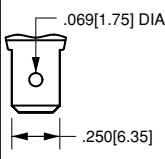
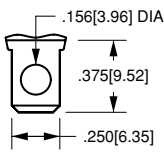
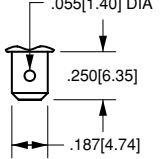
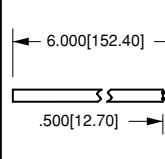
Mechanical Life

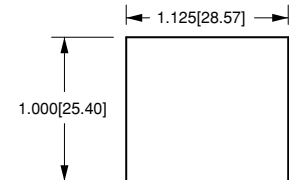
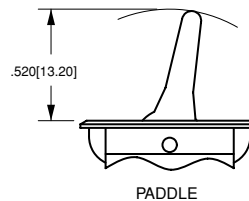
100,000 cycles

Operating Temperature

32°F to 150°F (0°C to +65.6°C)



			
.069[1.75] DIA	.156[3.96] DIA	.055[1.40] DIA	
.250[6.35]	.375[9.52]	.250[6.35]	6.000[152.40]
	.250[6.35]	.187[4.74]	.500[12.70]
.250 TAB (Q.C.)	SOLDER LUG	.187 TAB (Q.C.)	INTEGRATED WIRE LEAD (no exposed conductors)
TERMINAL TYPE			



MOUNTING HOLE
Panel Thickness:
.030[.762] min. to
.250[6.35] max.

LTG G O 50 1 - T B - B - R / 125N

1 Base Part Number 2 Circuit 3 Center Position 4 Rating 5 Termination 6 Actuator Style 7 Actuator Color 8 Base Color 9 Lens Color 10 Lamp Voltage

1 BASE PART NUMBER: SERIES¹

TG Double Pole, Non-Lighted
LTG Double Pole with Indicator Lights

2 CIRCUIT

See Circuit Designation Chart Page 17.

3 CENTER POSITION

C Center OFF, Three position
O No Center OFF, Two position

4 RATING

40 5A 250VAC, 10A 125VAC, 1/2HP 125-250VAC
41 5A 250VAC, 10A 125VAC
50 10A 250VAC, 15A 125VAC, 3/4HP 125-250VAC
51 10A 250VAC, 15A 125VAC

5 TERMINATION/FUNCTION

	solder lug	.250 tab QC	.187 tab QC	wire leads
ON-NONE-OFF	0	1	3	5
(ON)-NONE-OFF	A	B	D	F
ON-NONE-(OFF)	L	M	R	T
ON-NONE-ON	0	1	3	5
ON-NONE-(ON)	A	B	D	F
ON-OFF-ON	0	1	3	5

6 ACTUATOR STYLE

P paddle **T** rocker

7 ACTUATOR COLOR²

B black **W** white

8 BASE COLOR²

B black **W** white

9 LENS COLOR³

A amber **C** clear **R** red

10 LAMP VOLTAGE

incandescent	neon
6V 6 volt	125N 125 volt neon
12V 12 volt	250N 250 volt neon
18V 18 volt	
24V 24 volt	
28V 28 volt	

NOTES

Imprinting is available. Consult factory.

Panel Cut-Out Recommendations: For sheet metal panels, switch must enter panel in same direction as the punch. (Burr on bottom.) Test cut hole in actual material.

1 TG available with circuits A, B, C, D, E, F; LTG available with circuits G, H, I, J, M, N, P, Q, R, T, U, V, Y, Z. See page 17.

2 Custom colors are available. Consult factory.

3 Specify lens color for LTG-Series only.

() Indicates momentary function.

TTG-Series Rocker Switches



The TTG-Series Mini Tippet snap-in rocker switches consist of two single pole illuminated or non-illuminated switches in a common base. Each pole can have the same or different switch function. These switches are AC rated up to 20 amps and are also suitable for low-voltage DC applications, in a wide range of markets including Appliance, HVAC, Food service and Transportation.

Dielectric Strength

UL/CSA:

1000V - live to dead metal parts

Electrical Life

50,000 cycles- maintained

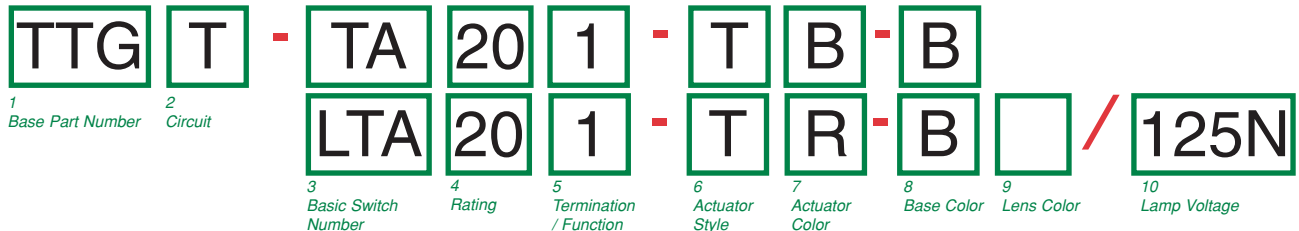
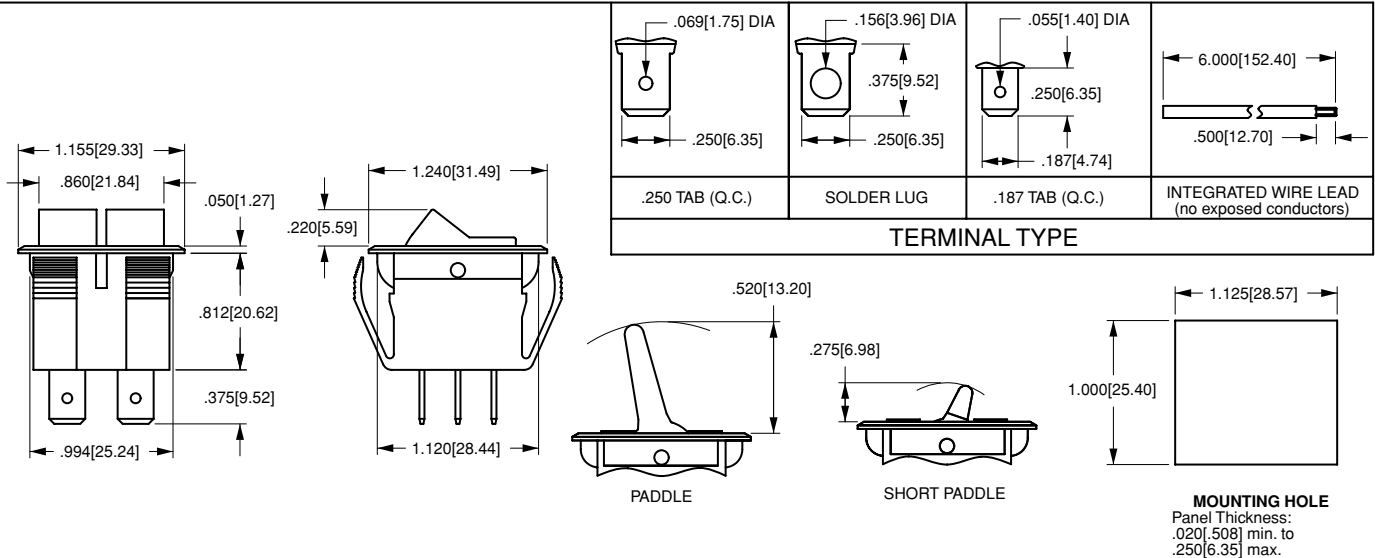
25,000 cycles- momentary

Mechanical Life

100,000 cycles

Operating Temperature

32°F to 150°F (0°C to +65.6°C)



1 BASE PART NUMBER: SERIES' TTG Two Single Pole switches in one base				6 ACTUATOR STYLE P paddle PS short paddle T rocker																																				
2 CIRCUIT See Circuit Designation Chart Page 17.																																								
3 BASIC SWITCH NUMBER TA ON-NONE-OFF TC ON-OFF-ON TB ON-NONE-ON LTA ON-NONE-OFF, lighted																																								
4 RATING 10 5A 250VAC, 10A 125VAC, 1/2HP 125-250VAC 11 5A 250VAC, 10A 125VAC, 5A 125VAC L 20 10A 250VAC, 15A 125VAC, 3/4HP 125-250VAC 21 10A 250VAC, 15A 125VAC 22 10A 250VAC, 15A 125VAC, 20A 125-250VAC H, 3/4HP 125-250VAC																																								
5 TERMINATION/FUNCTION <table><tr><td></td><td>solder lug</td><td>.250 tab QC</td><td>.187 tab QC</td><td>wire leads</td></tr><tr><td>ON-NONE-OFF</td><td>0</td><td>1</td><td>3</td><td>5</td></tr><tr><td>(ON)-NONE-OFF</td><td>A</td><td>B</td><td>D</td><td>F</td></tr><tr><td>ON-NONE-(OFF)</td><td>L</td><td>M</td><td>R</td><td>T</td></tr><tr><td>ON-NONE-ON</td><td>0</td><td>1</td><td>3</td><td>5</td></tr><tr><td>ON-NONE-(ON)</td><td>A</td><td>B</td><td>D</td><td>F</td></tr><tr><td>ON-OFF-ON</td><td>0</td><td>1</td><td>3</td><td>5</td></tr></table>							solder lug	.250 tab QC	.187 tab QC	wire leads	ON-NONE-OFF	0	1	3	5	(ON)-NONE-OFF	A	B	D	F	ON-NONE-(OFF)	L	M	R	T	ON-NONE-ON	0	1	3	5	ON-NONE-(ON)	A	B	D	F	ON-OFF-ON	0	1	3	5
	solder lug	.250 tab QC	.187 tab QC	wire leads																																				
ON-NONE-OFF	0	1	3	5																																				
(ON)-NONE-OFF	A	B	D	F																																				
ON-NONE-(OFF)	L	M	R	T																																				
ON-NONE-ON	0	1	3	5																																				
ON-NONE-(ON)	A	B	D	F																																				
ON-OFF-ON	0	1	3	5																																				
7 ACTUATOR COLOR unlighted ² B black W white lighted ³ A amber C clear G green LU blue R red																																								
8 BASE COLOR² B black W white																																								
9 LENS COLOR³ A amber C clear G green LU blue R red W white																																								
10 LAMP VOLTAGE incandescent 6V 6 volt 12V 12 volt 18V 18 volt 24V 24 volt 28V 28 volt neon ³ 125N 125 volt neon 250N 250 volt neon																																								

NOTES

Imprinting is available. Consult factory.

Panel Cut-Out Recommendations: For sheet metal panels, switch must enter panel in same direction as the punch. (Burr on bottom.) Test cut hole in actual material.

1 TTG available with circuits A,B,C,D,E,F,L,T,U.

2 Custom colors are available. Consult factory.

3 Specify lens color only if Basic Switch Number is LTA (lighted) with paddle actuator. If not, leave blank. Neon lamps (125V or 250V) not recommended with green or blue actuators and lenses.

4 Specify lamp voltage only if basic switch is LTA (lighted)

() Indicates momentary function.

TLG-Series Rocker Switches



The TLG-Series Mini Tippette snap-in rocker switches are single pole, rocker or paddle actuated with an adjacent indicator light. These single-actuator-switches are AC rated to 20 amps and are also suitable for low voltage DC applications, in a wide range of markets including Appliance, HVAC, Food service and Transportation.

Dielectric Strength

UL/CSA:

1000V - live to dead metal parts

Electrical Life

50,000 cycles- maintained

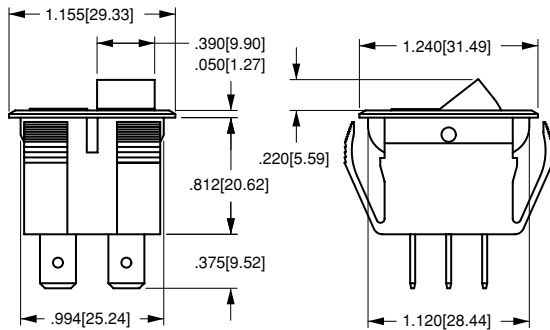
25,000 cycles- momentary

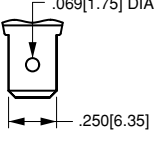
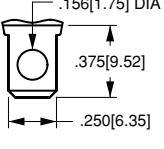
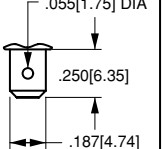
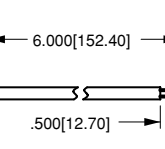
Mechanical Life

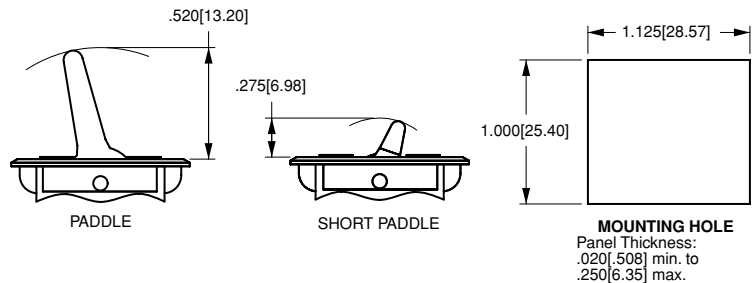
100,000 cycles

Operating Temperature

32°F to 150°F (0°C to +65.6°C)



			
.069[1.75] DIA	.156[1.75] DIA	.055[1.75] DIA	
.250[6.35]	.375[9.52]	.250[6.35]	6.000[152.40]
	.250[6.35]	.187[4.74]	.500[12.70]
.250 TAB (Q.C.)	SOLDER LUG	.187 TAB (Q.C.)	INTEGRATED WIRE LEAD (no exposed conductors)
TERMINAL TYPE			



TLG	G	-	D	R	-	TA	20	1	-	T	B	-	B	/	125N
-----	---	---	---	---	---	----	----	---	---	---	---	---	---	---	------

1	2	3	4	5	6	7	8	9	10	11	12
Base Part Number	Circuit	Lens Design	Lens Color	Basic Switch Number	Rating	Termination / Function	Actuator Style	Actuator Color	Base Color	Lens Color	Lamp Voltage

1 BASE PART NUMBER: SERIES

TLG Single Pole with adjacent Indicator Light

2 CIRCUIT¹

See Circuit Designation Chart Page 17.

3 LENS DESIGN

D diamond
L long Line

4 LENS COLOR

A amber G green W white
C clear R red

5 BASIC SWITCH NUMBER²

TA ON-NONE-OFF TC ON-OFF-ON
TB ON-NONE-ON LTA OFF-NONE-ON, lighted

6 RATING

10 5A 250VAC, 10A 125VAC, 1/2HP 125-250VAC
11 5A 250VAC, 10A 125VAC, 5A 125VAC L
20 10A 250VAC, 15A 125VAC, 3/4HP 125-250VAC
21 10A 250VAC, 15A 125VAC
22 10A 250VAC, 15A 125VAC, 20A 125-250VAC H, 3/4HP 125-250VAC

NOTES:

Imprinting is available. Consult factory.

Panel Cut-Out Recommendations: For sheet metal panels, switch must enter panel in same direction as the punch. (Burr on bottom.) Test cut hole in actual material.

1 Available with circuits G, H, I, J, K.

2 Neon lamps (125V or 250V) not recommended with green or blue actuators and lenses.

3 Custom colors are available. Consult factory.

4 Specify lens color only if Basic Switch Number is LTA (lighted). If not, leave blank.

() Indicates momentary function.

7 TERMINATION/FUNCTION

	solder lug	.250 tab QC	.187 tab QC	wire leads
ON-NONE-OFF	0	1	3	5
(ON)-NONE-OFF	A	B	D	F
ON-NONE-(OFF)	L	M	R	T
ON-NONE-ON	0	1	3	5
ON-NONE-(ON)	A	B	D	F
ON-OFF-ON	0	1	3	5

8 ACTUATOR STYLE

P paddle PS short paddle
T rocker

9 ACTUATOR COLOR³

unlighted²
B black
W white
lighted²
A amber
C clear
G green
LU blue
R red

10 BASE COLOR³

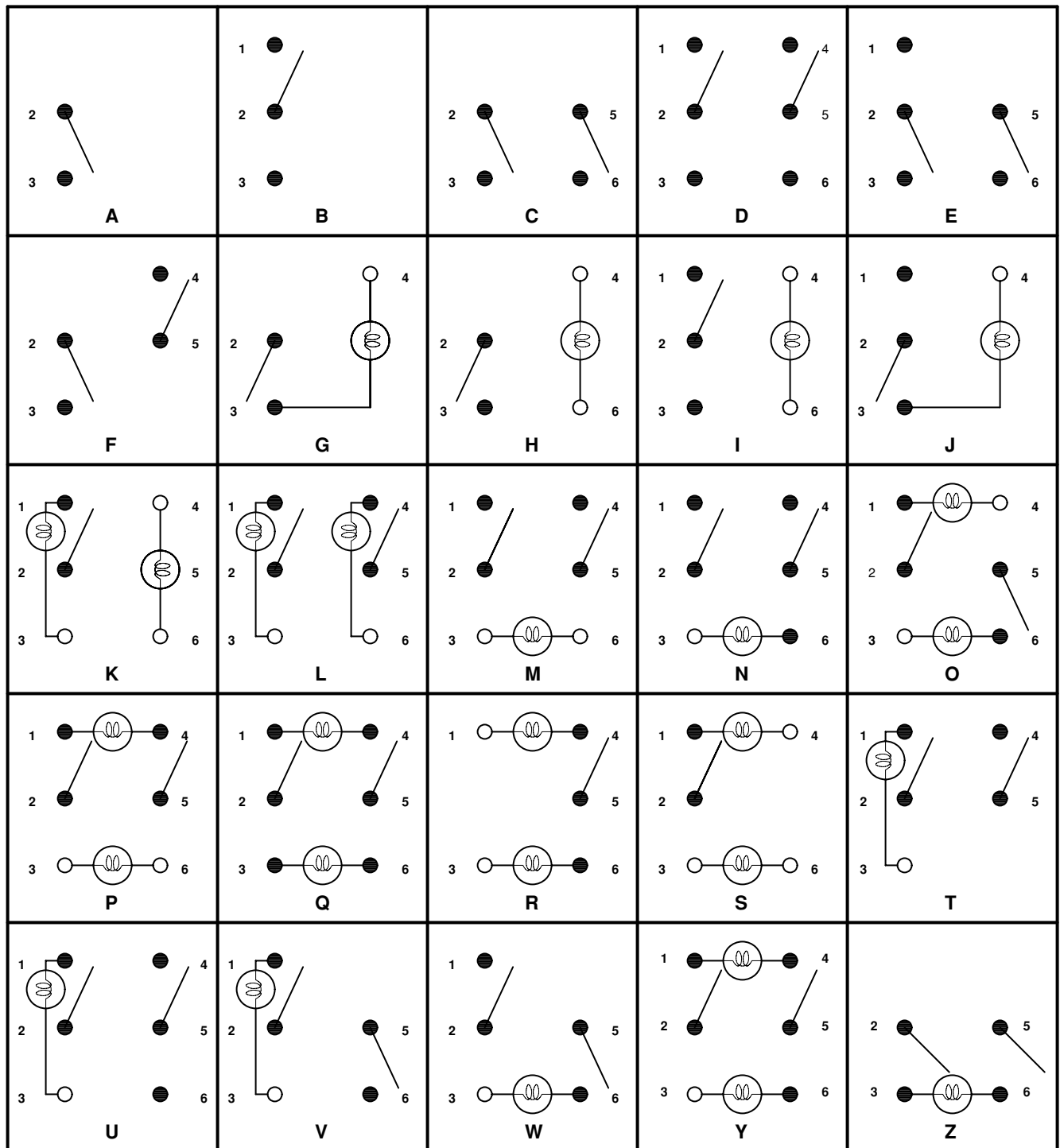
B black W white

11 LENS COLOR^{2,4}

A amber G green R red
C clear LU blue W white

12 LAMP VOLTAGE

incandescent
6V 6 volt
12V 12 volt
18V 18 volt
24V 24 volt
28V 28 volt
neon²
125N 125 volt neon
250N 250 volt neon



● CONTACT TERMINAL
Will make contact with switching lever

○ ISOLATED TERMINAL
Does not make contact with switching lever

● CONTACT TERMINAL AND SWITCH LEVER

○ BULB

Tippette Switches



The Tippette Series is a traditionally styled rocker switch, available in sealed or unsealed versions. These switches are appropriate for use in those applications not requiring the more stringent sealing protection of the V-Series and L-Series switches. The Tippette Series is available in both illuminated and non-illuminated versions and features a wide variety of circuits, actuator styles and bracket options. This versatile offering includes international agency certifications and ratings to 26 amps for select circuits.

Electrical

Contact Rating	15 amps, 125 VAC 10 amps, 250 VAC 3/4 HP 125-250 VAC 15 amps, 12-30 VDC
Life	25,000 cycles circuit dependent 50,000 cycles circuit dependent consult factory for applicable circuits.
Contacts	Fine silver, silver cad-oxide
Terminals	Brass or copper/silver plate 1/4" (6.3mm) Quick Connect terminations standard. Solder lug - Brass Tin Plated Wire Lead 16 gauge standard 105°C 600VAC Screw Terminals - Brass

Mechanical

Endurance	100,000 cycles minimum
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Physical

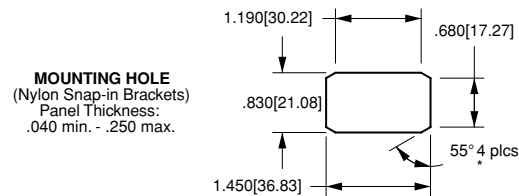
Lighted	Incandescent - rated 10,000 hours Neon - rated 25,000 hours
Seals	Bracket - Actuator WBL/MBL optional external gasket panel seal
Base	Phenolic (150°C)
Rocker/Bracket	Nylon 66 (105°C)

Agency Certifications



Select circuits and constructions with IEC approvals are available. Consult factory.

Mounting



*Angled corners are suggested for optimum fit.
Standard rectangular cutout is acceptable.

TIGA51 - 6M - BL - MBL

¹
Base Part Number

²
Actuator Style

³
Actuator Color

⁴
Bracket

1 BASE PART NUMBER: SERIES/POLES/CIRCUITRY^{8, 11, 13}/RATING⁷/TERMINATION¹⁰

10A 250VAC, 15A 125VAC, 3/4 HP 125-250VAC, 15A 6-28VDC⁹

Single Pole in Double Pole base²

solder lug	.250 tab	screw term.	wire leads
TIGA50	TIGA51	TIGA54	TIGA55
TIGA5A	TIGA5B	TIGA5E	TIGA5F
TIGA5L	TIGA5M	TIGA5S	TIGA5T
TIGB50	TIGB51	TIGB54	TIGB55
TIGB5A	TIGB5B	TIGB5E	TIGB5F
TIGC50	TIGC51	TIGC54	TIGC55
TIGC5A	TIGC5B	TIGC5E	TIGC5F
TIGC5L	TIGC5M	TIGC5S	TIGC5T

Three Pole

solder lug	.250 tab	screw term.	wire leads
TIHK50	TIHK51	TIHK54	TIHK55
TIHK5A	TIHK5B	TIHK5E	TIHK5F
TIHK5L	TIHK5M	TIHK5S	TIHK5T
TIHL50	TIHL51	TIHL54	TIHL55
TIHL5A	TIHL5B	TIHL5E	TIHL5F
TIHM50	TIHM51	TIHM54	TIHM55
TIHM5A	TIHM5B	TIHM5E	TIHM5F
TIHM5L	TIHM5M	TIHM5S	TIHM5T

VDE APPROVED

10A 250VAC, 15A 125VAC, 12(6)A 250VAC T85

Single Pole in Double Pole base²

solder lug	.250 tab	wire lead
TIGA90	TIGA91	TIGA95
TIGB90	TIGB91	TIGB95
TIGC90	TIGC91	TIGC95

Double Pole

solder lug	.250 tab	screw term.	wire leads
TIGK50	TIGK51	TIGK54	TIGK55
TIGK5A	TIGK5B	TIGK5E	TIGK5F
TIGK5L	TIGK5M	TIGK5S	TIGK5T
TIGL50	TIGL51	TIGL54	TIGL55
TIGL5A	TIGL5B	TIGL5E	TIGL5F
TIGM50	TIGM51	TIGM54	TIGM55
TIGM5A	TIGM5B	TIGM5E	TIGM5F
TIGM5L	TIGM5M	TIGM5S	TIGM5T

Four Pole

solder lug	.250 tab	screw term.	wire leads
TIHK50	TIHK51	TIHK54	TIHK55
TIHK5A	TIHK5B	TIHK5E	TIHK5F
TIHK5L	TIHK5M	TIHK5S	TIHK5T
TIHL50	TIHL51	TIHL54	TIHL55
TIHL5A	TIHL5B	TIHL5E	TIHL5F
TIHM50	TIHM51	TIHM54	TIHM55
TIHM5A	TIHM5B	TIHM5E	TIHM5F
TIHM5L	TIHM5M	TIHM5S	TIHM5T

Double Pole

solder lug	.250 tab	wire lead
TIGK90	TIGK91	TIGK95
TIGL90	TIGL91	TIGL95
TIGM90	TIGM91	TIGM95

Additional ratings up to 20A 125-277VAC, 1 1/2HP 125 VAC, 2HP 250VAC are available.

Consult factory for specifics.

2 ACTUATOR STYLE

1S	Angular/Smooth Face Gloss ¹²	6M	Curved/Smooth Face Matte ³
1C	Angular/Cross Serations Gloss ¹²	6S	Curved/Smooth Face Gloss ³
1F	Flatted/Smooth Face Gloss ¹²	7S	Rounded Paddle/Smooth Face Gloss ¹
1L	Angular/Longline Serations Gloss ^{1, 12}	7N	Witch's Hat/Narrow ¹⁵
2L	Long Smooth/Narrow ¹⁶	7P	Witch's Hat/Wide ¹⁵

3 ACTUATOR COLOR⁹

BL black **WH** white **RD** red

4 BRACKET STYLE⁹

A	Screw Mount ⁵
B	Screw Mount ^{5, 14}
C	Screw Mount ⁵
H	Screw Mount ⁵
NBL	Nylon Black
WBL	Watershedding Black ⁴
MBL	Marine Style Black
FN	Metal Snap-In ⁵
FN BLK	Black Metal Snap-In ⁵
FN SS	Stainless Steel Snap-In ⁵
FW	Wide Stainless Steel Snap-In ⁵

NOTES

- 1 NBL, FN, & FW brackets only.
- 2 For single pole switch in a single pole base, specify TIL with single pole circuitry/rating/termination.
- 3 NBL, WBL, & MBL brackets only. With 6M actuator, brackets also will be matte finish.
- 4 6M & 6S actuators only
- 5 Not available with 6M & 6S actuators.
- 6 Consists of WBL bracket, neoprene seal, and dummy rivets at open holes. Consult factory for agency approval status. All ratings are appropriate for usage in low voltage applications.
- 7 For additional special circuits, see page 21.
- 9 Custom colors are available, consult factory.
- 10 .187 tab and PC terminations are also available. Consult factory for catalog number callout.
- 11 () momentary
- 12 Not available with WBL or MBL style brackets.
- 13 Additional circuits available. See page 21.
- 14 Available with single pole TIL-Series only.
- 15 Available with bracket A, C or H only.
- 16 Not available with MBL or H brackets. Can be supplied as a double rocker to control separate poles of a TIG, TIH or TII switch. Consult factory for details.

LTILA51 - 6M - BL - RC - MBL - 12V

¹
Base Part Number

²
Actuator Style

³
Actuator Color

⁴
Lens Color

⁵
Bracket

⁶
Lamp Voltage

1 BASE PART NUMBER: SERIES/POLES/ILLUMINATION/CIRCUITRY¹²/RATING¹⁰/TERMINATION¹⁴

10A 250VAC, 15A 125VAC, 3/4 HP 125-250VAC, 15A 15-28VDC

illuminated Single Pole in Double Pole base

solder lug	.250 tab	screw term.	wire leads
LTILA50	LTILA51	LTILA54	LTILA55
LTILA5A	LTILA5B	LTILA5E	LTILA5F
LTILA5L	LTILA5M	LTILA5S	LTILA5T
LTILB50	LTILB51	LTILB54	LTILB55
LTILB5A	LTILB5B	LTILB5E	LTILB5F
LTILC50	LTILC51	LTILC54	LTILC55
LTILC5A	LTILC5B	LTILC5E	LTILC5F
LTILC5L	LTILC5M	LTILC5S	LTILC5T

illuminated Double Pole

solder lug	.250 tab	screw term.	wire leads
LTIGK50	LTIGK51	LTIGK54	LTIGK55
LTIGK5A	LTIGK5B	LTIGK5E	LTIGK5F
LTIGK5L	LTIGK5M	LTIGK5S	LTIGK5T
LTIGL50	LTIGL51	LTIGL54	LTIGL55
LTIGL5A	LTIGL5B	LTIGL5E	LTIGL5F
LTIGM50	LTIGM51	LTIGM54	LTIGM55
LTIGM5A	LTIGM5B	LTIGM5E	LTIGM5F
LTIGM5L	LTIGM5M	LTIGM5S	LTIGM5T

Additional ratings up to 12A 250VAC, 17A 125 VAC, 3/4 HP 125 VAC, 1HP 250VAC are available.

Consult factory for specifics.

Three pole switch is also available: Substitute H for fourth digit of part number. ex. LTIHK51

NOTES

- 1 NBL, FN, & FW brackets only. Double pole circuits provided with 3 pole base.
- 2 LTIL-Series with NBL, FN, & FW brackets only.
- 3 NBL, WBL, & MBL brackets only. With 6M actuator, bracket will also be matte finish.
- 4 1S, 1C, 1L & 7S with NBL bracket only available with LTIL-Series.
- 5 6M, 6S actuators only.
- 6 Not available with 6M and 6S actuators.
- 7 Not recommended with neon lamps.
- 8 Consists of WBL bracket, neoprene seal, dummy rivets at open holes. Consult factory for agency approval status.
- 9 Not recommended with blue or green lenses.
- 10 All ratings are appropriate for usage in low voltage applications.
- 11 Custom colors and additional bracket styles are available, consult factory.
- 12 () - momentary
- 13 All double throw circuits supplied with two lenses. To specify two different lens colors, specify second color, after first color. (ex. LTIGM51-6S-BL-RC/GN-WBL-12V)
- 14 .187 tab and PC terminations are also available. Consult factory for catalog number callout.

2 ACTUATOR STYLE¹

1S	Angular/Smooth Face Gloss ¹
1C	Angular/Cross Serations Gloss ¹
1L	Angular/Longline Serations Gloss ¹
6M	Curved/Smooth Face Matte ³
6S	Curved/Smooth Face Gloss ³
7S	Rounded Paddle/Smooth Face Gloss ²

3 ACTUATOR COLOR¹¹

BL black **WH** white **RD** red

4 LENS COLOR¹³

AM	amber	RC	red	GN	green ⁷
LU	blue ⁷	CL	clear	WH	white

5 BRACKET STYLE¹¹

NBL	Nylon Black
WBL	Watershedding Black ⁵
MBL	Marine Style Black ^{5, 6}
FN	Metal Snap-In ^{4, 6}
FN BLK	Black Metal Snap-In ^{4, 6}
FN SS	Stainless Steel Snap-In ^{4, 6}

6 LAMP VOLTAGE

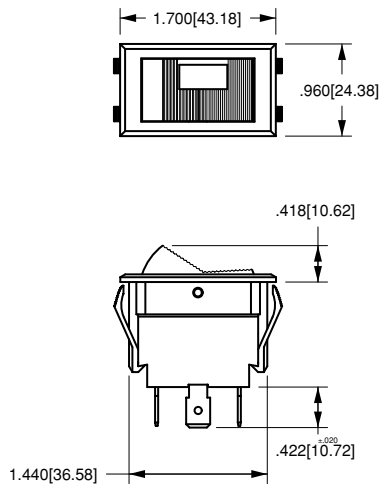
incandescent

125N 125 volt **250N** 250 volt

neon⁹

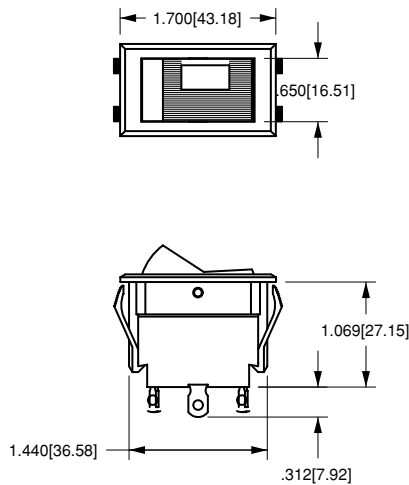
6V	6 volt	12V	12 volt	18V	18 volt
24V	24 volt	28V	28 volt		

1C
CROSS-LINE W/ONE LENS



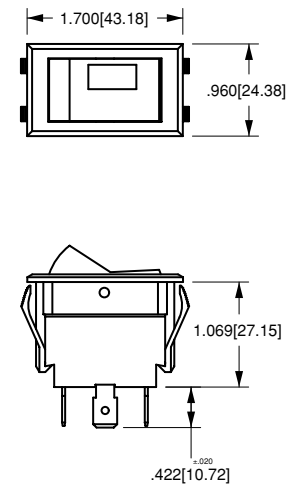
WITH .250 TAB
TERMINALS
AND NBL BRACKET

1L
LONG-LINE W/ONE LENS



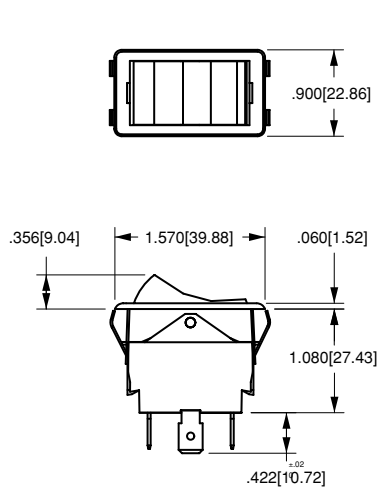
WITH SOLDER LUG
TERMINAL
AND NBL BRACKET

1S
SMOOTH W/ONE LENS



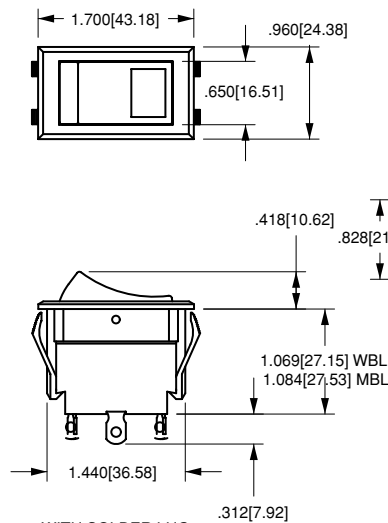
WITH .250 TAB
TERMINALS
AND NBL BRACKET

1F
FLATTED STYLE NO LENS



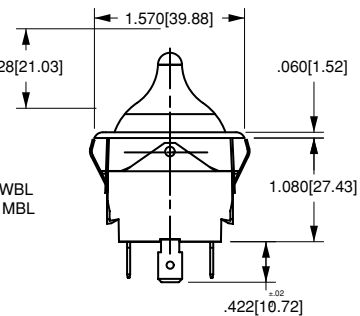
WITH .250 TAB
TERMINALS
AND FN BRACKET

6M, 6S
CURVED W/ONE LENS



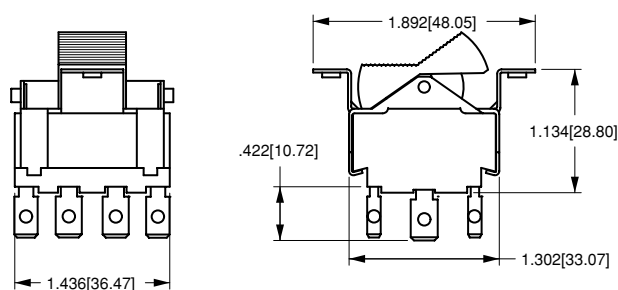
WITH SOLDER LUG
TERMINALS
AND WBL/MBL BRACKET

7S
TOGGLE-STYLE W/ONE LENS

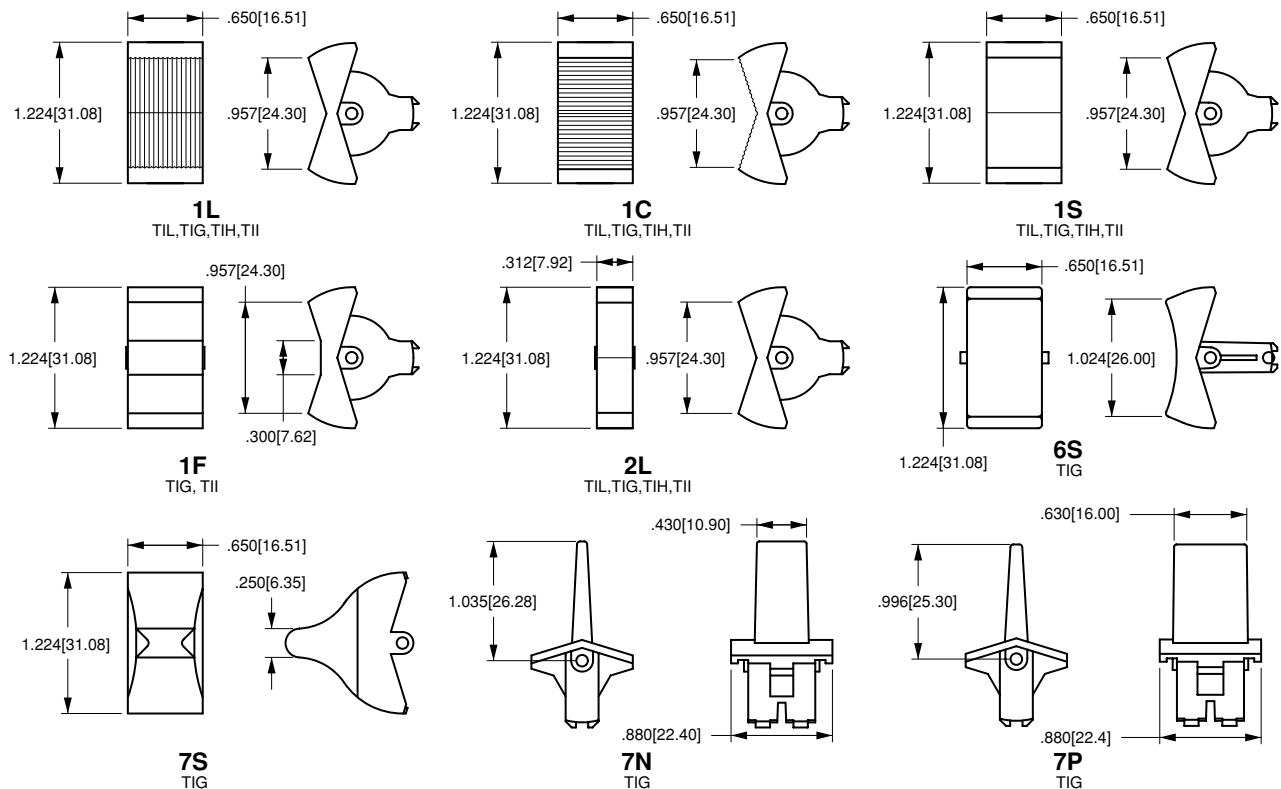
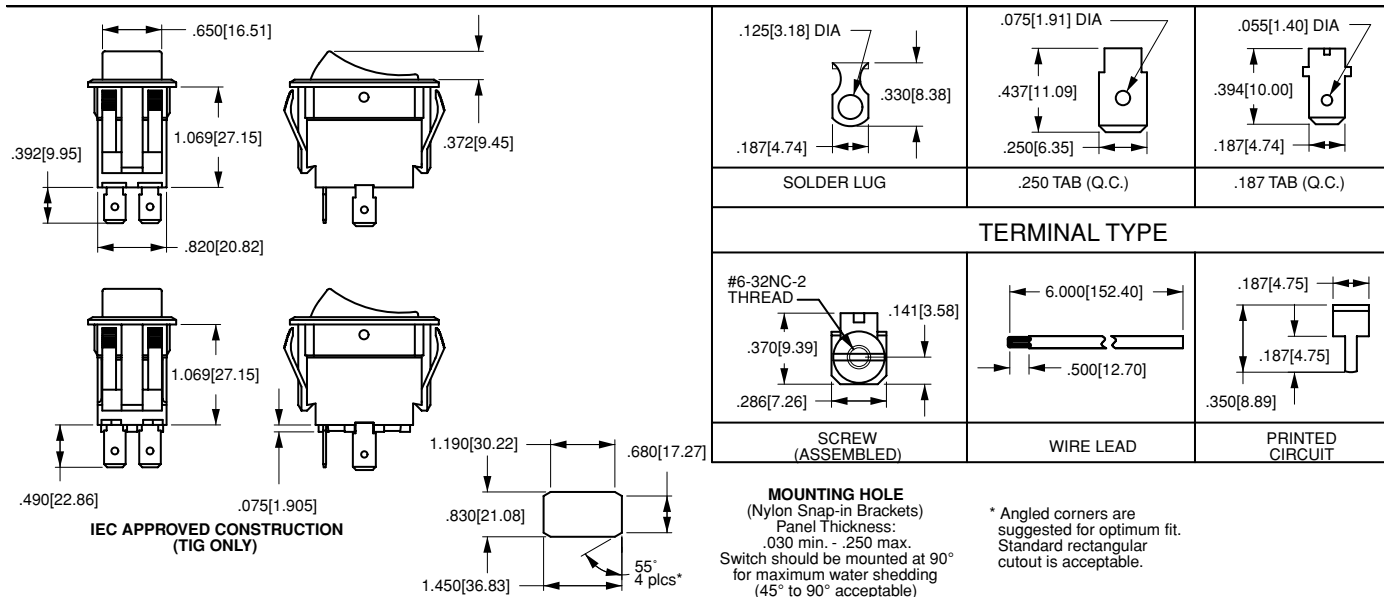


WITH .250 TAB
TERMINALS
AND FN BRACKET

1C
TII-SERIES CROSS-LINE W ONE LENS



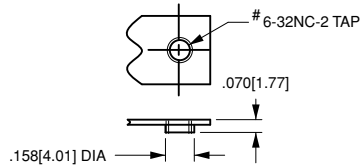
WITH .250 TAB TERMINALS AND A BRACKET



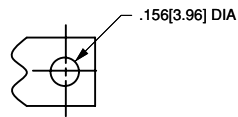
Special Circuits for Tippet Rocker Switches

Circuit	Position 1	Position 2	Position 3
Progressive Two Circuit			
GG	BOTH CIRCUITS ON	ONE CIRCUIT ON	OFF
GG	BOTH CIRCUITS (ON)	ONE CIRCUIT ON	OFF
Single Pole Triple Throw			
GE	ON	ON	ON
Two Circuit			
GH	CIRCUIT 1 ON	BOTH CIRCUITS ON	CIRCUIT 2 ON
GP	CIRCUIT 2 ON	CIRCUIT 1 ON	OFF
Reversing Double Pole Double Throw			
GO	ON	OFF	ON
GX	ON	NONE	ON

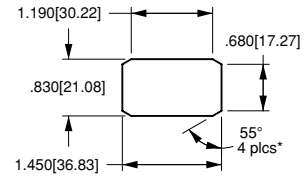
() Indicates momentary function.

Dimensional Specifications: in. [mm]

TAPPED HOLE

Standard with
A & B Brackets


CLEARANCE HOLE

Standard with
C Bracket

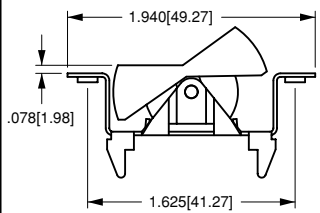
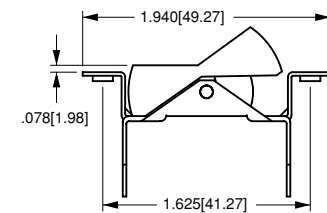
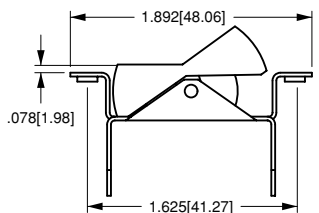
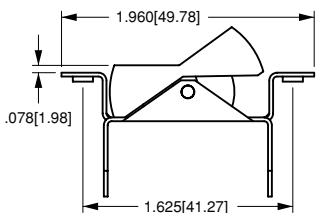
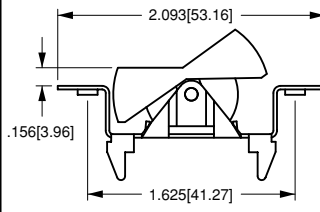
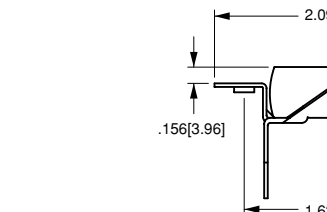
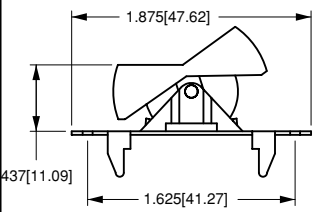
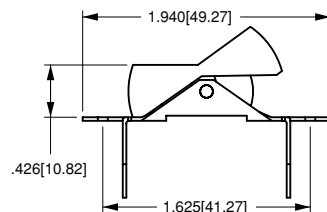
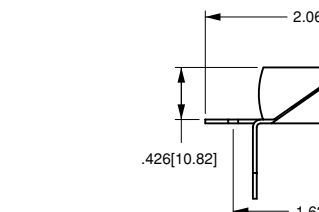
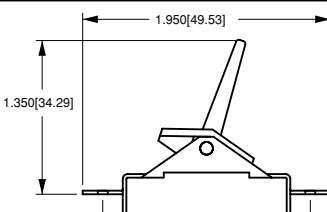
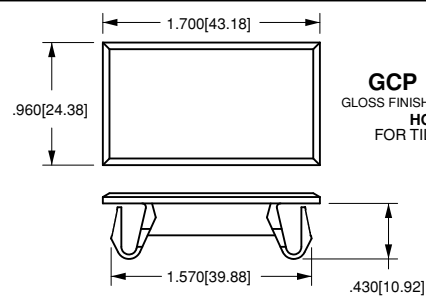

MOUNTING HOLE

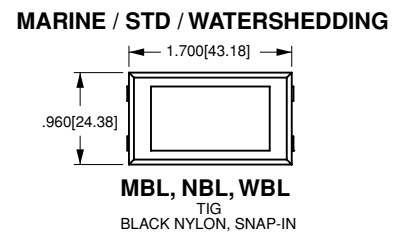
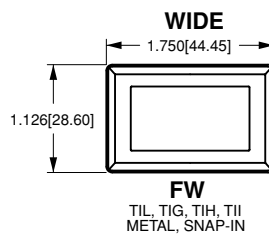
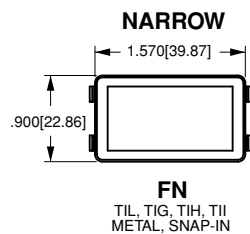
(Nylon Snap-in Brackets)

Panel Thickness:

.030 min. - .250 max.

* Angled corners are suggested for optimum fit. Standard rectangular cutout is acceptable.

TIL	TIG	TII	TIH
 <p>A TIL</p>	 <p>A TIG</p>	 <p>A TII</p>	 <p>A TIH</p>
 <p>B TIL</p>	 <p>B TII, TIG</p>		
 <p>C* TIL</p>	 <p>C TIG</p>	 <p>C TIH, TII</p>	
	 <p>H TIG</p>	 <p>GCP / GMP GLOSS FINISH / MATTE FINISH HOLE PLUG FOR TIL, TIG, TIH & TII</p>	



LS-Series Rocker Switches



The LS-Series Softspot illuminated rocker switches feature a three-color high brightness light sequence, from a single lamp. These switches are designed with a standard nylon snap-in bracket and “Drip-Dry” construction that protects the front panel from dust and moisture, and are ideal for Marine and Transportation industry applications.

Dielectric Strength

1000V - live to dead metal parts

Electrical Life

50,000 cycles- maintained

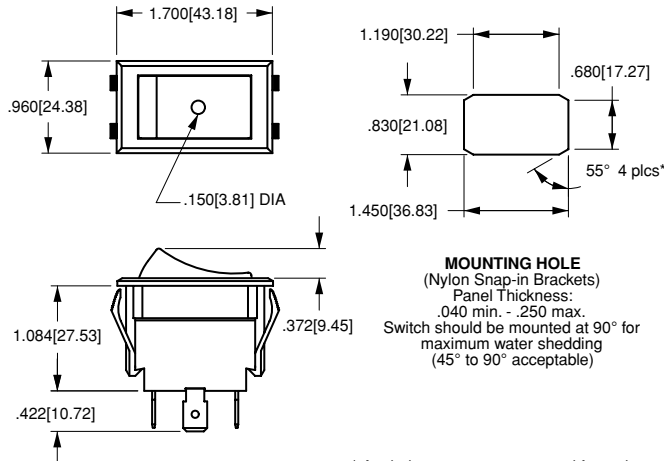
25,000 cycles- momentary

Mechanical Life

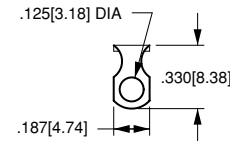
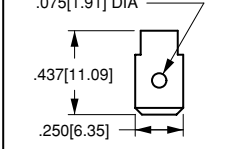
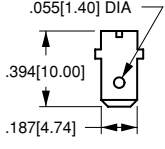
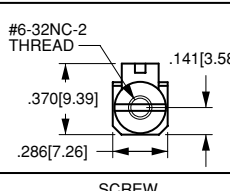
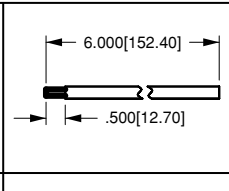
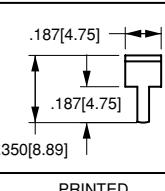
100,000 cycles

Operating Temperature

0°F to 150°F (-17.8°C to +65.6°C)



* Angled corners are suggested for optimum fit.
Standard rectangular cutout is acceptable.

		
SOLDER LUG	.250 TAB (Q.C.)	.187 TAB (Q.C.)
TERMINAL TYPE		
		
SCREW (ASSEMBLED)	WIRE LEAD	PRINTED CIRCUIT

LS1511 - 13 - BL - BL - 012

1
Base Part Number

2
Lighting
Sequence

3
Actuator
Color

4
Base
Color

5
Lamp
Voltage

1 BASE PART NUMBER: SERIES/POLES/ILLUMINATION/ CIRCUITRY/RATING/TERMINATION¹

	10A 250VAC, 15A 125VAC, 3/4 HP 125-250VAC, 15A 15-28VDC			
Single Pole	solder lug	.250 tab	screw term.	wire leads
ON-NONE-OFF	LS1510	LS1511	LS1514	LS1515
ON-NONE-(OFF)	LS1520	LS1521	LS1524	LS1525
(ON)-NONE-OFF	LS1530	LS1531	LS1534	LS1535
ON-NONE-ON	LS1540	LS1541	LS1544	LS1545
ON-NONE-(ON)	LS1550	LS1551	LS1554	LS1555
ON-OFF-ON	LS1560	LS1561	LS1564	LS1565
ON--OFF-(ON)	LS1570	LS1571	LS1574	LS1575
(ON)-OFF-(ON)	LS1580	LS1581	LS1584	LS1585

2 LIGHTING SEQUENCE^{1,2}

	position 1	position 2	position 3
01	red	red	red
02	amber	amber	amber
03	green	green	green
10	red	---	none
11	red	clear	red
12	red	clear	amber
13	red	clear	green
14	red	clear	blue
15	red	clear	clear
20	amber	---	none
21	amber	clear	red
22	amber	clear	amber
23	amber	clear	green
24	amber	clear	blue
25	amber	clear	clear
30	green	---	none
31	green	clear	red
32	green	clear	amber
33	green	clear	green
34	green	clear	blue
35	green	clear	clear
40	blue	---	none
41	blue	clear	red
42	blue	clear	amber
43	blue	clear	green
44	blue	clear	blue
45	blue	clear	clear
50	clear	---	none
51	clear	clear	red
52	clear	clear	amber
53	clear	clear	green
54	clear	clear	blue
55	clear	clear	clear

3 ACTUATOR COLOR⁴

BL black
WH white

4 BASE COLOR⁴

BL black
WH white

5 LAMP VOLTAGE²

neon
125 125 volts neon
250 250 volts
incandescent
006 6 volts
012 12 volts
018 18 volts
024 24 volts

NOTES

- Independent lamp is standard. Dependent lamp with ON-OFF function (including momentary) is available with Lighting Sequences 10, 20, 30, 40 and 50. (No light in OFF position.)
- Green and blue not recommended with 125 volt or 250 volt neon lamps.
- Additional terminations available. Consult factory.
- Custom colors available. Consult factory.
- () Indicates momentary function.

LT-Series Toggle Switches



The LT-Series illuminated toggle switches feature a three-color lighting sequence from a single lamp. These lighted toggles contain neoprene bushing seals for dust and moisture protection and provide a simple way to dress-up most any Marine or Transportation industry panel. A variety of circuits and terminations are available.

Dielectric Strength

1000V-live to dead metal parts

Electrical Life

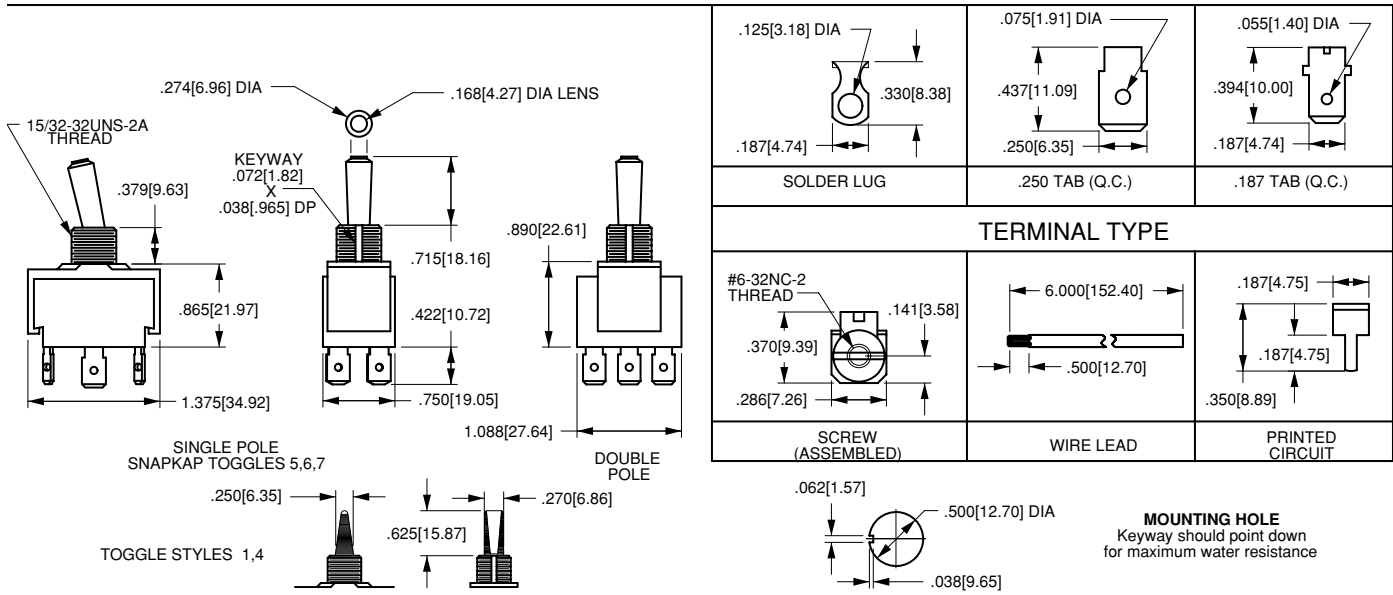
50,000 cycles- maintained
25,000 cycles- momentary

Mechanical Life

100,000 cycles

Operating Temperature

32°F to 185°F (0°C to 85°C)



LT-1561 - 1 30 - 012

1 Base Part Number

2 Actuator Style

3 Lighting Sequence

4 Lamp Voltage

1 BASE PART NUMBER: SERIES/POLES/ILLUMINATION/CIRCUITRY³/RATING/TERMINATION⁵

10A 250VAC, 15A 125VAC, 3/4 HP 125-250VAC, 15A 15-28VDC

Single Pole in Double Pole base

Single Pole				Double Pole				
solder lug	.250 tab	screw term.	wire leads	solder lug	.250 tab	screw term.	wire leads	
LT-1510	LT-1511	LT-1514	LT-1515	ON-NONE-OFF	LT-2510	LT-2511	LT-2514	LT-2515
LT-1520	LT-1521	LT-1524	LT-1525	ON-NONE-(OFF)	LT-2520	LT-2521	LT-2524	LT-2525
LT-1530	LT-1531	LT-1534	LT-1535	(ON)-NONE-OFF	LT-2530	LT-2531	LT-2534	LT-2535
LT-1540	LT-1541	LT-1544	LT-1545	ON-NONE-ON	LT-2540	LT-2541	LT-2544	LT-2545
LT-1550	LT-1551	LT-1554	LT-1555	ON-NONE-(ON)	LT-2550	LT-2551	LT-2554	LT-2555
LT-1560	LT-1561	LT-1564	LT-1565	ON-OFF-ON	LT-2560	LT-2561	LT-2564	LT-2565
LT-1570	LT-1571	LT-1574	LT-1575	ON-OFF-(ON)	LT-2570	LT-2571	LT-2574	LT-2575
LT-1580	LT-1581	LT-1584	LT-1585	(ON)-OFF-(ON)	LT-2580	LT-2581	LT-2584	LT-2585

2 ACTUATOR STYLE

paddle¹

1 clear paddle

4 solid color paddle



snapkap style²

5 bright chrome

6 satin chrome

7 black molded



3 LIGHTING SEQUENCE^{3,4}

	position 1	position 2	position 3
01	red	red	red
02	amber	amber	amber
03	green	green	green
10	red	---	none
11	red	clear	red
12	red	clear	amber
13	red	clear	green
14	red	clear	blue
15	red	clear	clear
20	amber	---	none
21	amber	clear	red
22	amber	clear	amber
23	amber	clear	green
24	amber	clear	blue
25	amber	clear	clear
30	green	---	none
31	green	clear	red
32	green	clear	amber
33	green	clear	green
34	green	clear	blue
35	green	clear	clear
40	blue	---	none
41	blue	clear	red
42	blue	clear	amber
43	blue	clear	green
44	blue	clear	blue
45	blue	clear	clear
50	clear	---	none
51	clear	clear	red
52	clear	clear	amber
53	clear	clear	green
54	clear	clear	blue
55	clear	clear	clear

4 LAMP VOLTAGE⁵

neon
125 125 volts neon
250 250 volts

incandescent

006 6 volts
012 12 volts
018 18 volts
024 24 volts

NOTES

- 1 Solid color paddle available with lighting sequence 01, 02, 10 or 20.
- 2 SnapKap Toggle Lenses are available separately. Consult factory.
- 3 Independent lamp is standard. Dependent lamp with ON-OFF function (including momentary) is available with Lighting Sequences 10, 20, 30, 40 and 50. (No light in OFF position.)
- 4 Green and blue not recommended with 125 volt or 250 volt neon lamps.
- 5 Additional terminations available. Consult factory for details.

() Indicates momentary function.

F-Series Single Pole Toggle Switches



General purpose workhorses with options tailored to meet most any need. Ratings to 20A 277VAC, various actuator, bushing, termination, and circuit choices allow this versatile switch to easily integrate into a variety of different applications. The F-Series has a storied history in the Marine, Food Service, Generator, Industrial Control, and Office Automation markets and is appropriate for usage in low voltage DC applications as well.

Dielectric Strength

UL/CSA:

1000V - live to dead metal parts

Electrical Life

50,000 cycles- maintained

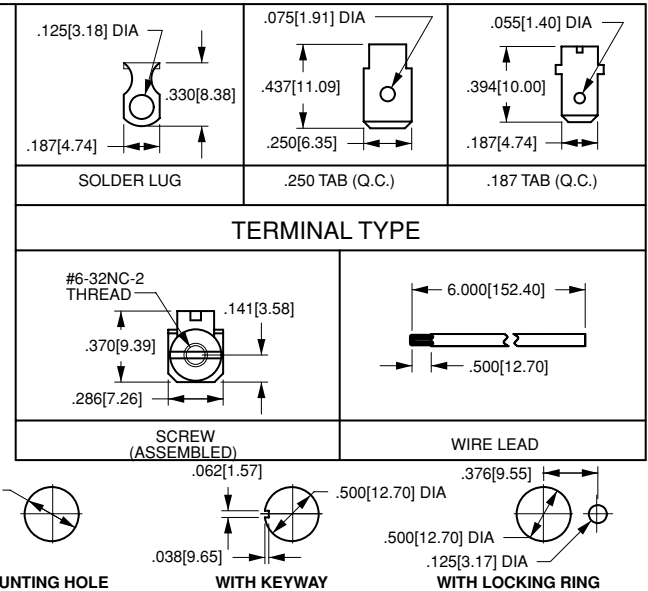
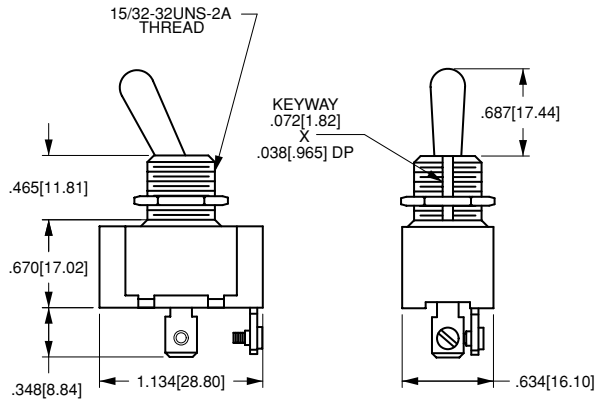
25,000 cycles- momentary

Mechanical Life

100,000 cycles

Operating Temperature

0°F to 150°F (-17.8°C to +65.6°C)


2FA54
- 73
/ TABS

1
Base Part Number

2
Actuator Style

3
Tab Terminals

1 BASE PART NUMBER: SERIES/CIRCUITRY/RATING/TERMINATION¹

10A 250VAC; 15A 125VAC; 3/4 HP 125-250VAC

	Solder Lugs	.250 Tabs	Screw Terminals
ON-NONE-OFF	2FA53	2FA53-.../TABS	2FA54
(ON)-NONE-OFF	6FA53	6FA53-.../TABS	6FA54
ON-NONE-(OFF)	6FA57	6FA57-.../TABS	6FA58
ON-NONE-ON	2FB53	2FB53-.../TABS	2FB54
ON-NONE-(ON)	6FB53	6FB53-.../TABS	6FB54
ON-OFF-ON	2FC53	2FC53-.../TABS	2FC54
ON-OFF-(ON)	6FC53	6FC53-.../TABS	6FC54
(ON-OFF)-(ON)	6FC53	6FC53-.../TABS	6FC54

Additional ratings up to 20A 125VAC, 12A 250VAC, 1HP 120-240 VAC available. Consult factory for specifics.

2 ACTUATOR STYLE

BAT STYLE TOGGLE²

	unsealed	sealed	toggle length	bushing length
73	78	78	0.687	0.465
E3	E8	E8	2.000	0.465

3 TAB TERMINALS

/TABS	Tab Terminals
(blank)	Leave blank if tab terminals not required.

NOTES

- Consult factory for .187 tab, wire lead and combination screw/tab/solder lug termination callouts.
- Additional toggle options are available. Consult factory.
- () indicates momentary function.

G-Series Toggle Switches



General purpose workhorses with options tailored to meet most any need. Ratings to 20A 277VAC, international approvals, various actuator, bushing, termination, and circuit choices allow this toggle switch to easily integrate into a variety of different applications. The G-Series has a storied history in the Marine, Food Service, Generator, Industrial Control, and Office Automation markets and is appropriate for usage in low voltage DC applications as well.

Dielectric Strength

UL/CSA: 1000V - live to dead metal parts & opposite polarity
VDE: 4000V - live to dead metal parts; 1250V - opposite polarity & across open contacts

Electrical Life

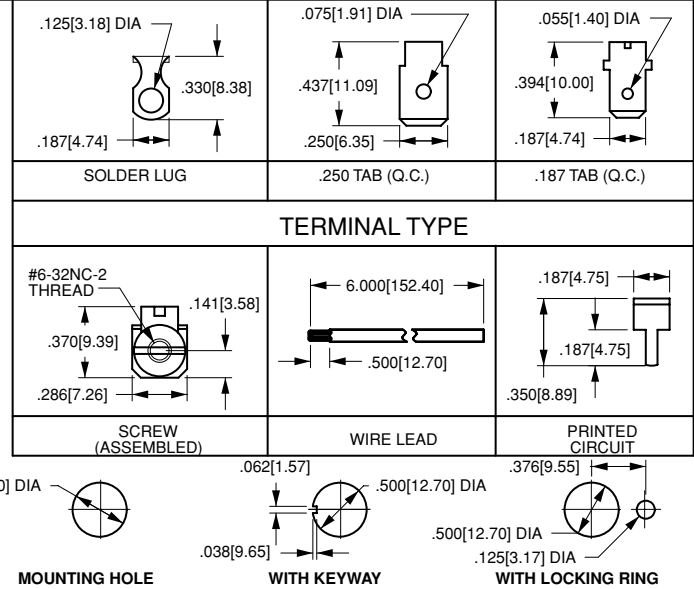
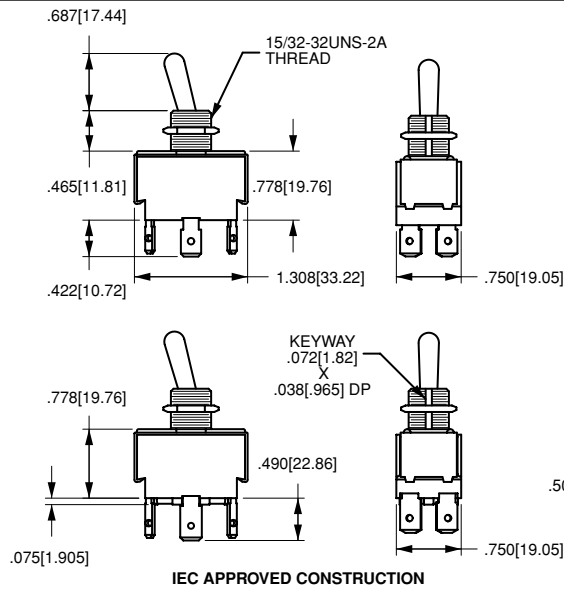
50,000 cycles- maintained
25,000 cycles- momentary

Mechanical Life

100,000 cycles

Operating Temperature

32°F to 185°F (0° to 85°C)



2GM51 - 73

¹
Base Part Number

²
Actuator Style

1 BASE PART NUMBER: SERIES/POLES/CIRCUITRY/RATING/TERMINATION³

Single Pole in Double Pole base

10A 250VAC, 15A 125VAC, 3/4 HP 125-250VAC

solder lug	.250 tab	screw term.		solder lug	.250 tab	screw term.
2GA50	2GA51	2GA54	ON-NONE-OFF	2GK50	2GK51	2GK54
6GA5A	6GA5B	6GA5E	(ON)-NONE-OFF	6GK5A	6GK5B	6GK5E
6GA5L	6GA5M	6GA5S	ON-NONE-(OFF)	6GK5L	6GK5M	6GK5S
2GB50	2GB51	2GB54	ON-NONE-ON	2GL50	2GL51	2GL54
6GB5A	6GB5B	6GB5E	ON-NONE-(ON)	6GL5A	6GL5B	6GL5E
2GC50	2GC51	2GC54	ON-OFF-ON	2GM50	2GM51	2GM54
6GC5A	6GC5B	6GC5E	ON-OFF-(ON)	6GM5A	6GM5B	6GM5E
6GC5L	6GC5M	6GC5S	(ON-OFF)-(ON)	6GM5L	6GM5M	6GM5S

10A 250VAC, 15A 125VAC, 12 (6)A 250VAC T85/55 ENEC/VDE Approved⁴

2GA90	2GA91	-	ON-NONE-OFF	2GK90	2GK91
2GB90	2GB91	-	ON-NONE-ON	2GL90	2GL91
2GC90	2GC91	-	ON-OFF-ON	2GM90	2GM91

Additional ratings up to 20A 125-277VAC, 1 1/2 HP 125VAC, 2HP 250 VAC and special circuits available. Consult factory for specifics.

2 ACTUATOR STYLE⁴

	unsealed	sealed	toggle length	bushing length
BAT ⁵	73	78	0.687	0.465
PADDLE	NBL3	NBL8	0.687	0.465
BAT ²	D-3B-B	-	0.687	0.379
PADDLE ²	-	D-4B-B	0.687	0.379

NOTES

- Not available with 73 or NBL3 style toggles, T55 with 78 and NBL8 style toggles.
- All nylon bushing and toggle.
- Consult factory for .187 tab, wire lead and combination screw/tab/solder lug termination callouts.
- Additional actuator options available. Consult factory.
- Nylon toggle with black ebanol plated bushing.
- () Indicates momentary function.

H/I-Series Toggle Switches



General purpose workhorses with options tailored to meet most any need. Ratings to 17A 125VAC, various actuator, bushing, termination, and circuit choices allow this toggle to easily integrate into a variety of different applications. The H/I-Series has a storied history in the Food service, Generator, Industrial Control, and Office Automation markets and are appropriate for usage in low voltage DC applications as well.

Dielectric Strength

UL/CSA: 1000V-live to dead metal parts

Electrical Life

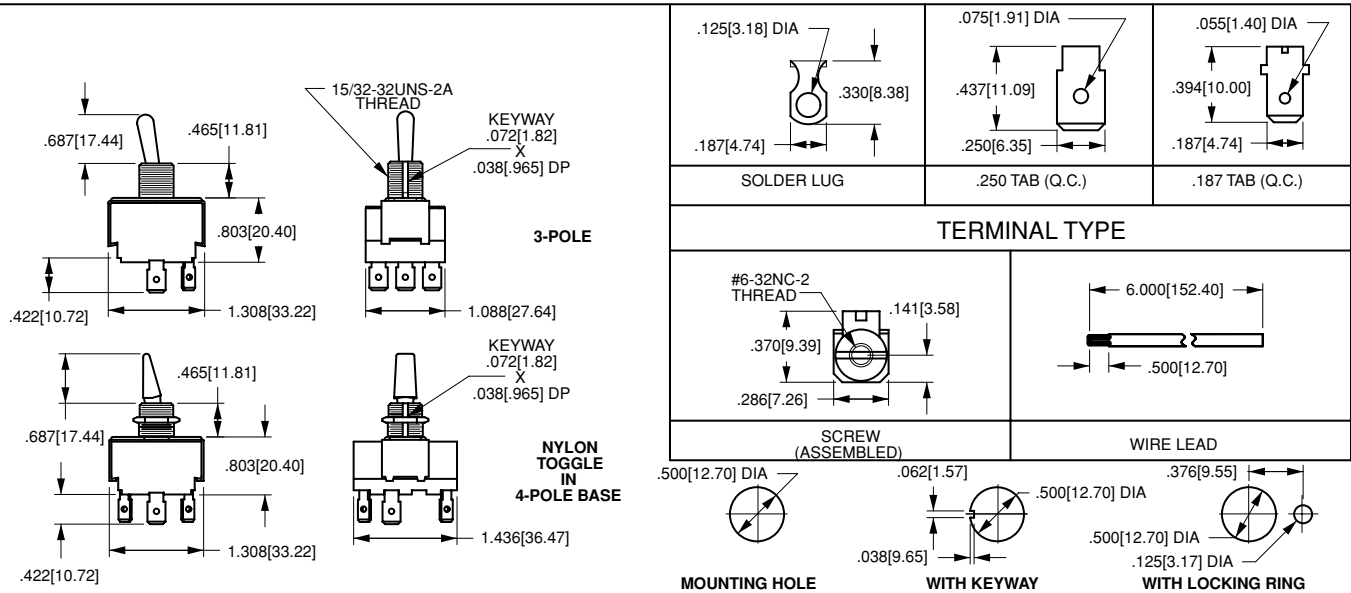
50,000 cycles- maintained
25,000 cycles- momentary

Mechanical Life

100,000 cycles

Operating Temperature

32°F to 185°F (0°C to 85°C)



HK251

73

¹
Base Part Number

²
Actuator Style

1 BASE PART NUMBER: SERIES/POLES/CIRCUITRY/RATING/TERMINATION*

10A 250VAC, 15A 125VAC, 3/4 HP 125-250VAC, 1, 2 or 3 phase

Three Pole

solder .250
lug tab

HK250 HK251

HK25A HK25B

HK25L HK25M

HL250 HL251

HL25A HL25B

HM250 HM251

HM25A HM25B

HM25L HM25M

screw term.

HK254

HK25E

HK25S

HL254

HL25B

HM254

HM25B

HM25S

wire leads

HK255

HK25F

HK25S

HL25E

HL25F

HM255

HM25F

HM25T

OFF-NONE-ON

OFF-NONE-(ON)

ON-NONE-(OFF)

ON-NONE-ON

ON-NONE-(ON)

ON-OFF-ON

ON-OFF-(ON)

(ON-OFF-(ON))

Four Pole

solder .250
lug tab

IK250

IK25A

IK25L

IL250

IL25A

IM250

IM25A

IM25L

screw term.

IK254

IK25E

IK25S

IL254

IL25B

IM254

IM25B

IM25S

wire leads

IK255

IK25F

IK25T

IL25J

IL25F

IM255

IM25F

IM25S

Additional ratings up to 17A 125VAC, 12A 250VAC, 1HP 125VAC, 1 1/2 HP 250 VAC and special circuits available. Consult factory for specifics.

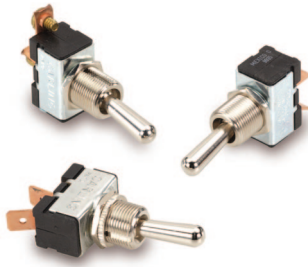
2 ACTUATOR STYLE*

	unsealed	sealed	toggle length	bushing length
BAT	73	78	0.687	0.465
	E3	E8	2.000	0.465
PADDLE ³	NBL3	NBL8	0.687	0.465

NOTES

- Additional actuator options available. Consult factory for details.
- Consult factory for .187 tab and combination screw/tab/solder lug termination callouts.
- Nylon toggle with black ebanol plated bushing.
- () Indicates momentary function.

C-Series Single Pole Toggle Switches



The C-Series single pole compact high current toggle switches are ideal for applications with back panel size constraints. These switches feature self-cleaning contacts and ratings up to 20A 125VAC, 10A 250VAC, 1 1/2 HP 125-250VAC. With a rugged metal construction, these switches figure prominently in the Environmental Controls, Marine, Food Service, Vacuum Cleaner and various other general purpose markets with stringent current carrying requirements.

Dielectric Strength

UL/CSA: 1000V - live to dead metal parts and opposite polarity.

Electrical Life

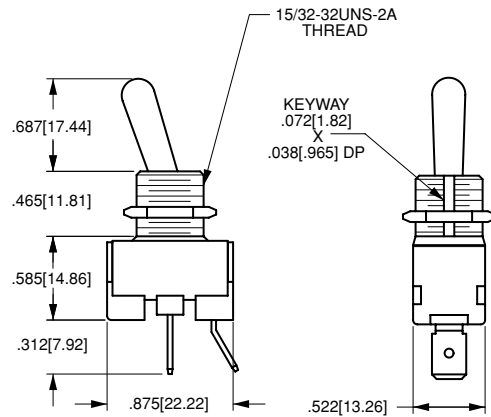
25,000 cycles

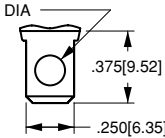
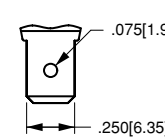
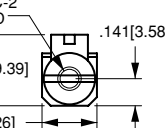
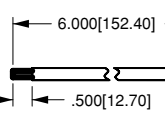
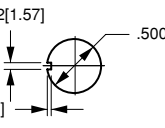
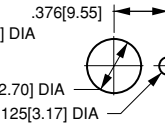
Mechanical Life

100,000 cycles

Operating Temperature

32°F to 185°F (0°C to +85°C)



 <p>.125[3.17] DIA .375[9.52] .250[6.35]</p>	 <p>.075[1.90] DIA .250[6.35]</p>
SOLDER LUG	.250 TAB (Q.C.)
TERMINAL TYPE	
 <p>#6-32NC-2 THREAD .141[3.58] .370[9.39] .286[7.26]</p>	 <p>6.000[152.40] .500[12.70]</p>
SCREW (ASSEMBLED)	WIRE LEAD
 <p>.500[12.70] DIA .062[1.57] .038[.965]</p>	 <p>.500[12.70] DIA .376[9.55] .500[12.70] DIA .125[3.17] DIA</p>
MOUNTING HOLE	WITH KEYWAY WITH LOCKING RING

CA201

- 73

¹
Base Part Number

²
Actuator Style

1 BASE PART NUMBER: SERIES/POLES/CIRCUITRY/RATING/TERMINATION

Single Pole

10A 250VAC, 20A 125VAC, 1 1/2 HP 125-250VAC

	solder lug	.250 tab	screw term.	wire leads
ON-NONE-OFF	CA200	CA201	CA204	CA205
ON-NONE-ON	CB200	CB201	CB204	CB205

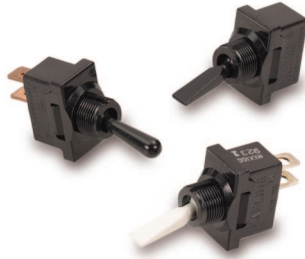
2 ACTUATOR STYLE¹

BAT	unsealed	sealed	toggle length	bushing length
	73	78	0.687	0.465

NOTES

¹ Additional toggle styles available. Consult factory.

D-Series Single Pole Toggle Switches



The D-Series single pole compact high current toggle switches are ideal for applications with back panel size constraints. These switches feature self-cleaning contacts and ratings up to 20A 125VAC, 10A 250VAC, 1 1/2 HP 125-250VAC. With an economical double insulated all-nylon construction, these switches figure prominently in the Environmental Controls, Marine, Food Service, Vacuum Cleaner and various other general purpose markets with stringent current carrying requirements.

Dielectric Strength

UL/CSA: 1000V - live to dead metal parts & opposite polarity
TUV: 4000V - live to dead metal parts; 750V - across open contacts

Electrical Life

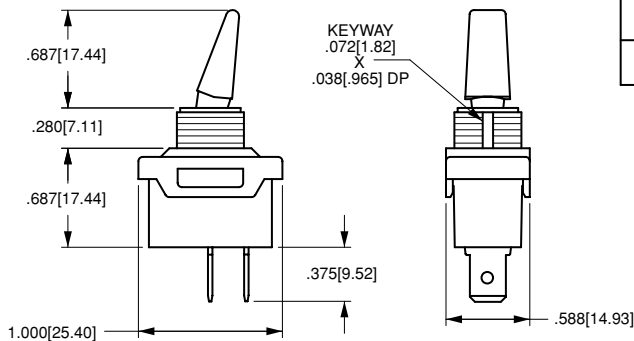
50,000 cycles

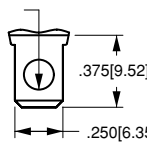
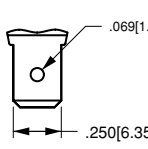
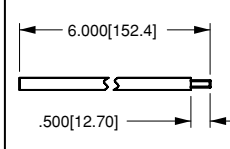
Mechanical Life

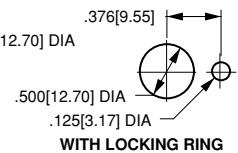
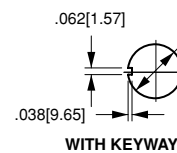
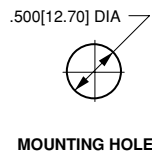
100,000 cycles

Operating Temperature

32°F to 185°F (0°C to 85°C)



		
SOLDER LUG	.250 TAB (Q.C.)	INTEGRATED WIRE LEAD (no exposed conductors)
TERMINAL TYPE		



DA221

1
Base Part Number

-

P

2
Actuator Style

-

B

3
Actuator Color

-

B

4
Bushing Color

1 BASE PART NUMBER: SERIES/CIRCUITRY/RATING/TERMINATION

10A 250VAC, 20A 125VAC, 1 1/2 HP 125-250VAC

	solder	.250	wire
	lug	tab	leads
OFF-NONE-ON	DA220	DA221	DA225
ON-NONE-ON	DB220	DB221	DB225
ON-OFF-ON	DC220	DC221	DC225

5A 250VAC, 10A 125VAC, 1/2 HP 125-250VAC,
4(4) 250VAC μ TUV approved

	wire
	leads
ON-NONE-OFF	DA945 ¹

2 ACTUATOR STYLE

B	bat	P	paddle
---	-----	---	--------

3 ACTUATOR COLOR²

B	black	W	white
---	-------	---	-------

4 BUSHING COLOR²

B	black	W	white
---	-------	---	-------

NOTES

- Available with wire leads and ON-OFF circuit only.
- Additional colors available. Please consult factory.

110-Series Heavy Action Toggle Switches



The 110-Series is a compactly designed, versatile metal construction toggle switch which is appropriate for a variety of uses. Features include single or double pole options, maintained or momentary construction with termination choices including solder lug end or bottom, wire leads and .250 tab terminals. The quick make/quick break contact mechanism makes the switch suitable for high voltage (125-250 volt) applications. This switch is popular within the Small Appliance, Floor Maintenance, and most low current AC/DC market segments.

Dielectric Strength

UL/CSA: 1000 - live to dead metal parts & opposite polarity

Electrical Life

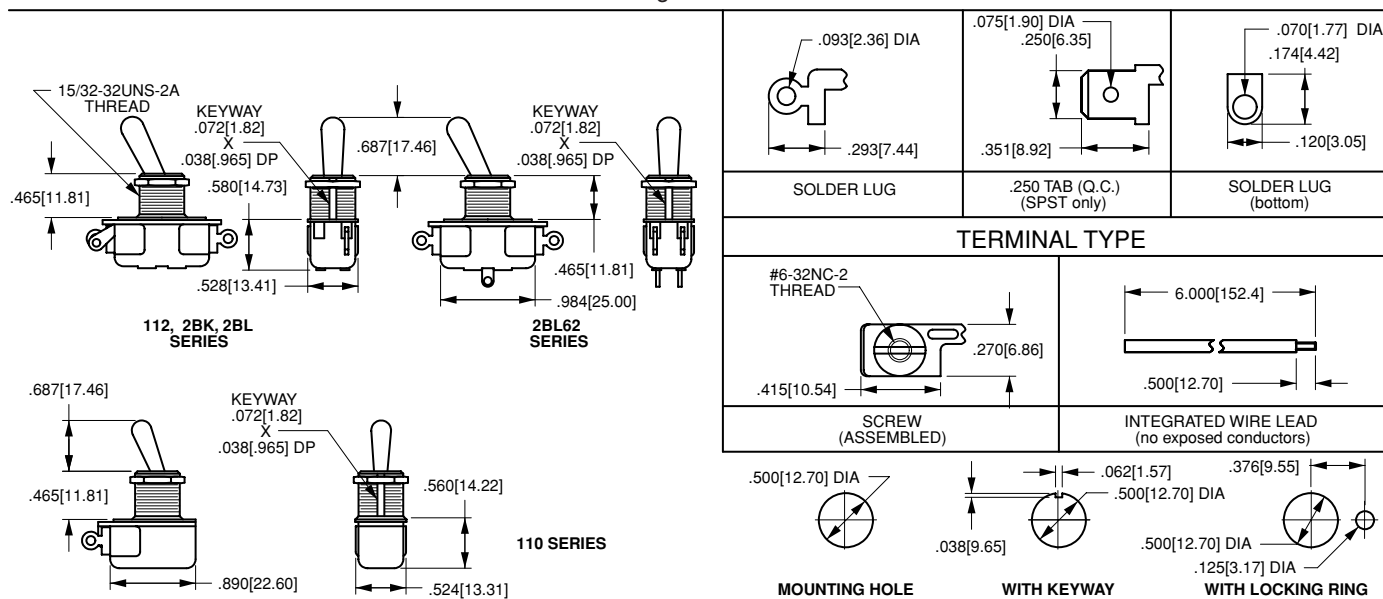
25,000 cycles

Mechanical Life

50,000 cycles

Operating Temperature

0°F to 150°F (-17.8°C to +65.6°C)



110-S

1
Base Part Number

73

2
Actuator Style

1 BASE PART NUMBER: SERIES/CIRCUITRY¹/RATING/TERMINATION²

3A 250V, 6A 125V, AC/DC

	solder lug (end)	solder lug (bottom)	screw terminals	wire leads
Single Pole				
ON-NONE-OFF	110	110-B	110-S	111-16
OFF-NONE-(ON)	110-M-NO	110-BM-NO	110-SM-NO	111-16M-NO
ON-NONE-(OFF)	110-M-NC	110-BM-NC	110-SM-NC	111-16M-NC

Double Pole

ON-NONE-OFF	2BK62	-	-	2BK65
ON-NONE-ON	2BL62	-	-	2BL65

1A 250V, 3A 125V, AC/DC

Single Pole				
ON-NONE-ON	112	-	-	112-A
ON-NONE-(ON)	112-M	-	-	112-M-A

Double Pole

ON-NONE-OFF	216	-	-	216A
OFF-NONE-(ON)	216-M-NO	-	-	216A-M-ANO
ON-NONE-(OFF)	216-M-NC	-	-	216A-M-ANC
ON-NONE-ON	316	316-B	-	-
ON-NONE-(ON)	316-M	316-BM	-	-

2 circuit

1 ON - 1 OFF	516	516-B	-	516-A
1 (ON) - 1 (OFF)	516-M	516-BM	-	516-AM

6A 120VAC

Single Pole				
ON-NONE-ON	2BB62	-	-	2BB65

5A 250V, 10A 125V, 1/4HP, 125V

Single Pole				
ON-NONE-OFF	160H	160H-B	160H-S	160H-A

2 ACTUATOR STYLE

BAT STYLE TOGGLE

unsealed	sealed	toggle length	bushing length
52	57	0.375	0.343
63	68	0.500	0.465
73	78	0.687	0.465

BALL STYLE TOGGLE

unsealed	sealed	toggle length	bushing length
21	-	0.375	0.250
22	-	0.375	0.343
25	-	0.375	0.875

NOTES

- Momentary function only available with 73 toggles.
- 160H and 110-Series are available with .250 tab terminals. Add suffix /TABS to end of part number. ex. 110-73/TABS

() Indicates momentary function.

DK/EK-Series Heavy Duty Toggle Switches



The switch that can handle your heavy duty requirements. Single or double pole with wire lead or screw terminations, and ratings to 20A 125V 10A 250V, the ac/dc DK/EK-Series is the most heavy duty toggle switch in the Carling line. Its sturdy metal construction and stiff actuation force will withstand the abuses of virtually any stringent application. The quick make/quick break contact mechanism is ideal for high voltage DC applications. The DK/EK-Series has long been a staple of the Industrial Motor control and General Purpose market segments.

Dielectric Strength

UL/CSA: 1000V - live to dead metal parts & opposite polarity

Electrical Life

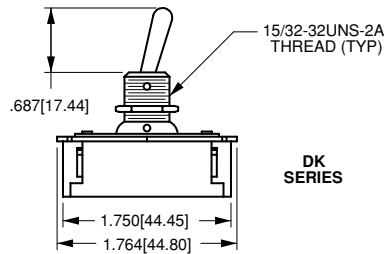
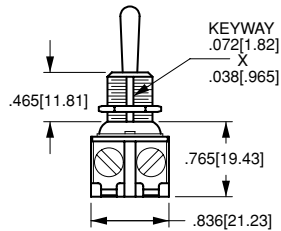
25,000 cycles

Mechanical Life

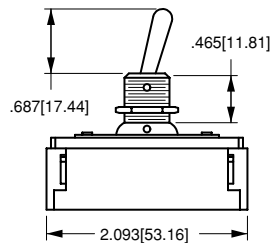
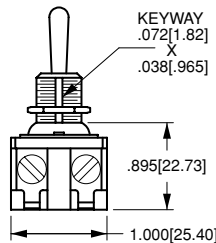
100,000 cycles

Operating Temperature

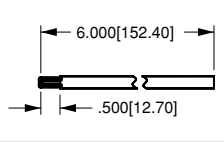
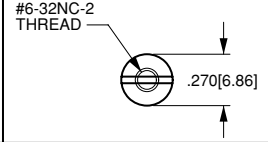
0°F to 150°F (-17.8°C to +65.6°C)

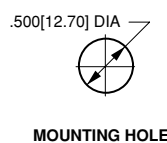


DK SERIES

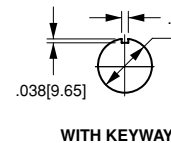


EK SERIES

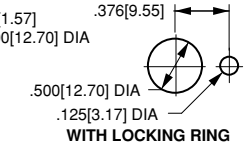
	
WIRE LEAD	SCREW (ASSEMBLED)
TERMINAL TYPE	



MOUNTING HOLE



WITH KEYWAY



WITH LOCKING RING

DK284

¹
Base Part Number

73

²
Actuator Style

1 BASE PART NUMBER: SERIES/POLES/CIRCUITRY/RATING/TERMINATION

8A 250V, 16A 125V, 1 HP 125-250V

	screw terminals	wire leads
--	-----------------	------------

Single Pole

ON-NONE-OFF	DA284	DA285
-------------	-------	-------

Double Pole

ON-NONE-OFF	DK284	DK285
-------------	-------	-------

10A 250V, 20A 125V, 1 1/2 HP 125-250V

	screw terminals	wire leads
--	-----------------	------------

Single Pole

ON-NONE-OFF	EA204	EA205
-------------	-------	-------

Double Pole

ON-NONE-OFF	EK204	EK205
-------------	-------	-------

2 ACTUATOR STYLE¹

BALL STYLE TOGGLE

unsealed	toggle length	bushing length
32	0.500	0.343

BAT STYLE TOGGLE

unsealed	toggle length	bushing length
73	0.687	0.465

NOTES

¹ Additional toggle lengths available. Consult factory for details.

MAAOA/215-Series Toggle Switches



The MAAOA/215-Series toggle switches are single pole, AC rated at 20 amps and 125 VAC. These switches are snap-in mounted, with a phenolic toggle and base, and are suitable for high ambient temperature applications including Coffee Makers and Food Warmers.

Dielectric Strength

UL/CSA: 1000V - live to dead metal parts

Electrical Life

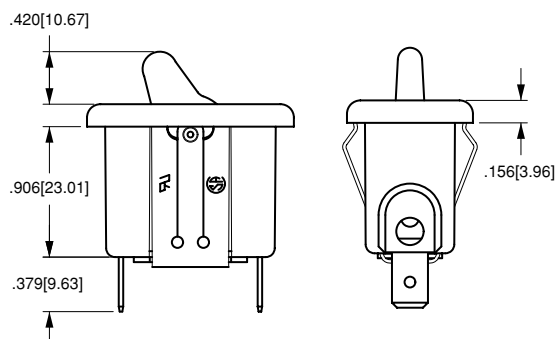
25,000 cycles

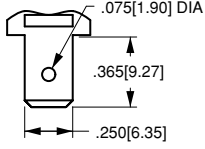
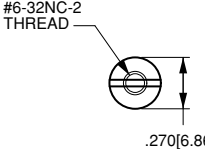
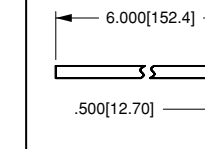
Mechanical Life

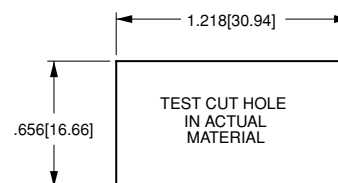
100,000 cycles

Operating Temperature

32°F to 185°F (0°C to 85°C)



		
.250 TAB (Q.C.)	SCREW (ASSEMBLED)	INTEGRATED WIRE LEAD (no exposed conductors)
TERMINAL TYPE		


MOUNTING HOLE

Panel Thickness: .030[.762] min - .090 [2.28] max.
Specific cutout dimension range dependent on panel thickness and material.

MAAOA - **BL** / **ON-OFF**

1 Base Part Number 2 Color 3 Legend

1 BASE PART NUMBER: SERIES/CIRCUITRY/RATING/TERMINATION
10A 250 VAC, 20A 125 VAC, 1/2 HP 125-250 VAC

	.250 Tabs	Screw Term	Wire Leads
Single Pole			
ON-OFF	MAAOA	215	215A
(ON)-OFF	MM-021	-	-

2 BASE & ACTUATOR COLOR

BL	black	BN	brown
----	-------	----	-------

3 LEGEND¹
ON-OFF
NOTES

Panel Cut-Out recommendations: For sheet metal panels, switch must enter panel in same direction as the punch. (Burr on bottom.) Test cut hole in actual material.

1 Imprinting is available. ON-OFF legend is not standard and must be specified after color. If not specified, switch will be manufactured with no legend.

() Indicates momentary function.

16-3P-Series Pushbutton Switches



The 16-3P-Series pushbutton switches are single pole and AC rated up to 3 amps. These momentary action switches have a slow-make, slow-break contact mechanism and require only light actuation force (4 oz. - 1 lb.). These switches are typically used in general purpose applications requiring finger actuation.

Dielectric Strength

UL/CSA: 1000V-live to dead metal parts

Electrical Life

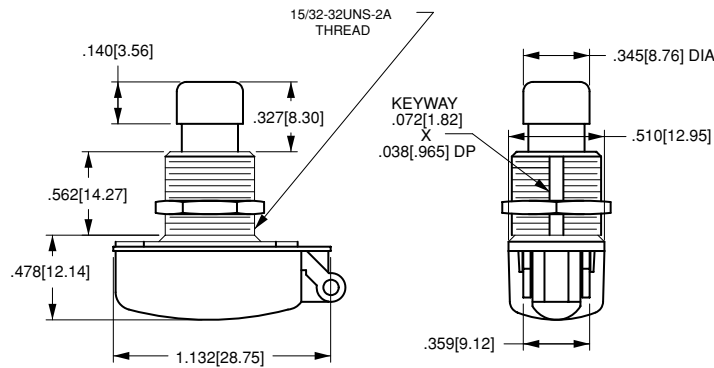
25,000 cycles

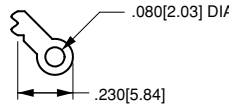
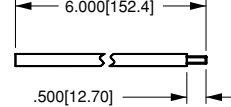
Mechanical Life

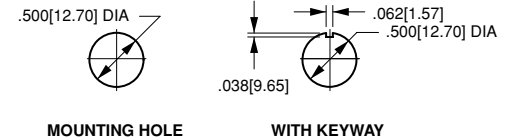
100,000 cycles

Operating Temperature

32°F to 185°F (0°C to 85°C)



	
SOLDER LUG	INTEGRATED WIRE LEAD (no exposed conductors)
TERMINAL TYPE	



16-3POFF - 4 - CBL

¹
Base Part Number

²
Bushing

³
Actuator Style

1 BASE PART NUMBER: SERIES/POLES/CIRCUITRY/RATING/TERMINATION
Single Pole
3A 125VAC

OFF - (ON)

OFF - (ON) with overtravel ¹

ON - OFF

1A 125VAC

ON - ON

ON - ON with overtravel ¹

1 ON - 1 OFF (2 circuit)

1 ON - 1 OFF with overtravel ¹ (2 circuit)

solder lug

16-3POFF

16-3POFF-OV

16-3PON

116-P

116-P-OV

516-P

516-P-OV

wire leads

16-3APOFF

16-3APOFF-OV

16-3APON

116-AP

116-AP-OV

516-AP

516-AP-OV

2 BUSHING STYLE

2 .312 length

4 .562 length

3 ACTUATOR STYLE²

CBL black plastic color cap

CRD red plastic color cap

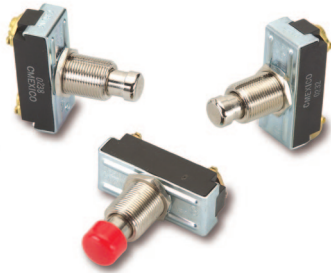
NOTES

¹ Overtravel only available with #4 bushing.

² When selection 3 is left blank, a standard nickel plated plunger is supplied.

() Indicates momentary function.

170/172-Series Pushbutton Switches



The 170/172-Series pushbutton switches are single pole, high amperage switches suitable for shallow back panel applications. These switches are momentary action and require an actuation force of 2.5 lbs. The 170/172-Series switches are equipped with a slow-make, slow-break contact mechanism and are rated at 15 amps at 125VAC.

Dielectric Strength

UL/CSA: 1000V - live to dead metal parts

Electrical Life

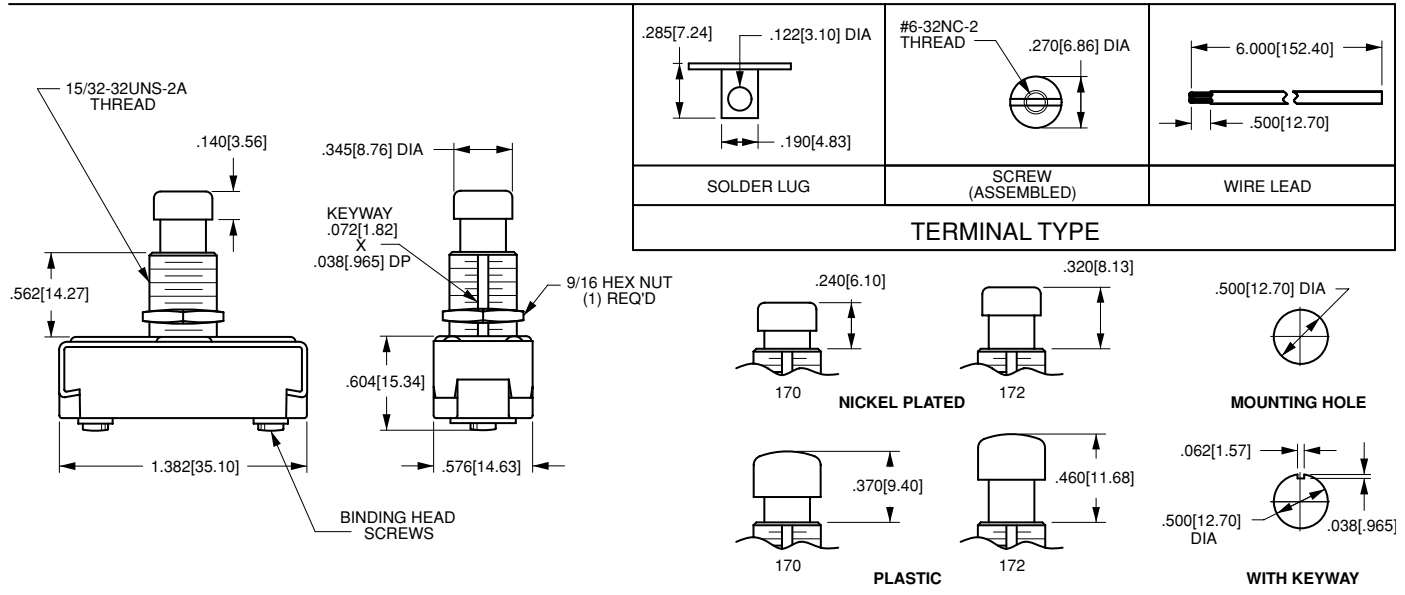
25,000 cycles- momentary

Mechanical Life

100,000 cycles

Operating Temperature

32°F to 185°F (0°C to +85°C)


172

¹
Base Part Number

CBL

²
Cap Style/Color

1 BASE PART NUMBER: SERIES/POLES/CIRCUITRY/RATING/TERMINATION

Single Pole
10A 250VAC; 15A 125VAC

	solder lugs	wire leads	screw terminals
ON-(OFF) ²	170-B	170-A	170
OFF-(ON) ²	172-B	172-A	172

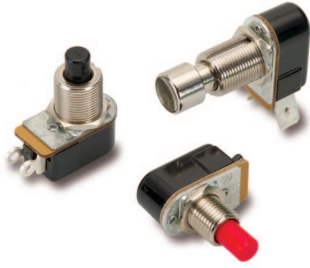
2 CAP STYLE/COLOR¹

CBL	black plastic
CGN	green plastic
CRD	red plastic
CWH	white plastic

NOTES

- 1 When selection 2 is left blank, a standard nickel plated plunger is supplied.
() Indicates momentary function.

P26-Series Pushbutton Switches



The P26-Series pushbutton switches are single pole, AC rated for 8 amps at 125 VAC and suitable for shallow back panel applications. These switches are momentary action with a medium actuation force (13 oz. typical). The P26-Series switch is equipped with a slow-make, slow-break contact mechanism. Typical applications include usage for an Alarm or Warning Device, as well as Test and Measurement Equipment.

Dielectric Strength

UL/CSA: 1000V - live to dead metal parts

Electrical Life

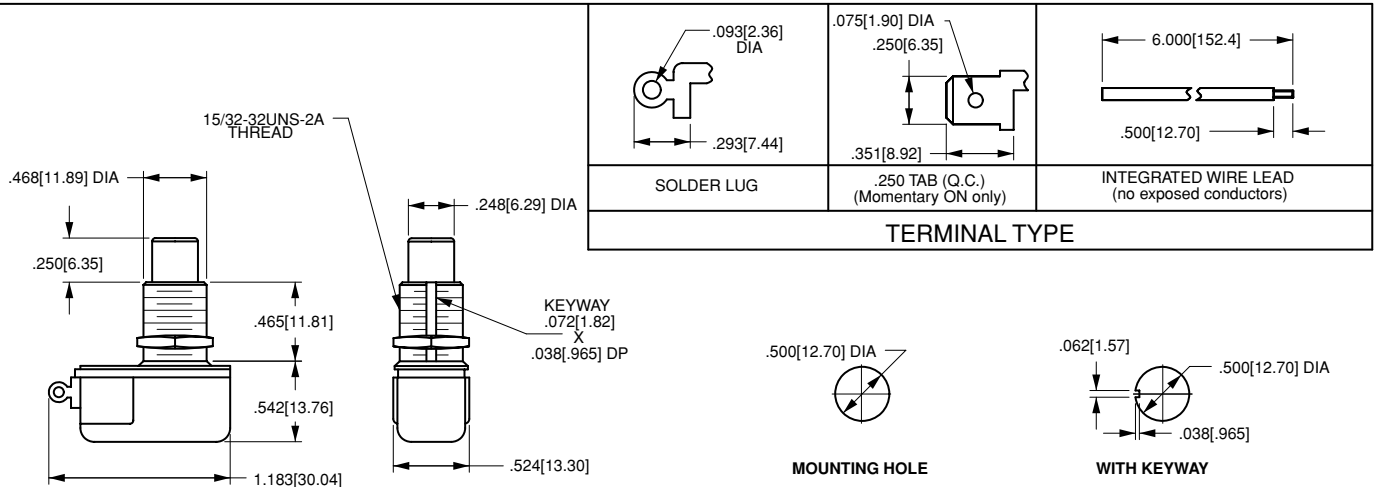
25,000 cycles

Mechanical Life

100,000 cycles

Operating Temperature

32°F to 85°F (0°C to +85°C)



P26L - 1D - BL

1
Base Part Number

2
Bushing Style

3
Button Style/Color

1 BASE PART NUMBER: SERIES/POLES/CIRCUITRY/RATING¹/TERMINATION
Single Pole

3A 250VAC, 6A 125 VAC, 3/4A 125V

OFF - (ON)

ON - (OFF)

3A 277VAC, 6A 125 VAC

OFF - (ON)

ON - (OFF)

solder lug

.250 tab

wire leads

P26A

P26L

P26B

-

P26F

P26T

P267A

P267L

P267B

-

P267F

P267T

2 BUSHING STYLE

length

diameter

1A

.406

.375

1B

.406

.468

1C

.465

.375

1D

.465

.468

3 BUTTON STYLE/COLOR

BL

black nylon

RD

red nylon

RND MTL²

round metal

CON MTL²

concave metal

NOTES

1 Additional ratings available. Consult factory for details.

2 Only available with 1D bushing in .502 length.

() Indicates momentary function.

P27-Series Pushbutton Switches



The P27-Series pushbutton switches are single pole, AC rated switches suitable for general purpose applications with a shallow back panel. These switches are momentary action with a medium actuation force (26 oz. typical). The P27-Series switch is equipped with a slow-make, slow-break contact mechanism, rated at 6 amps with a nylon concave pushbutton.

Dielectric Strength

UL/CSA:

1000V - live to dead metal parts

Electrical Life

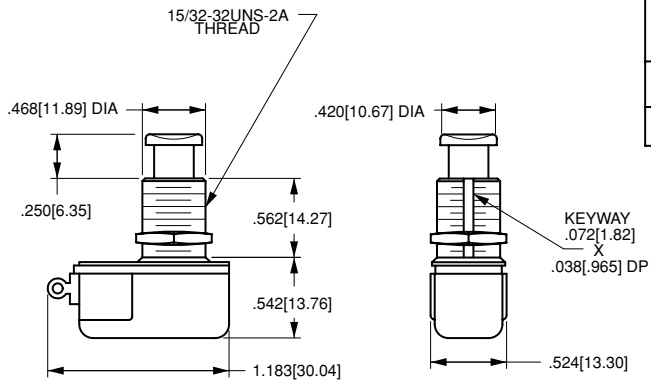
25,000 cycles

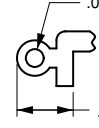
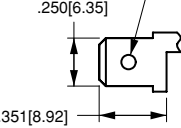
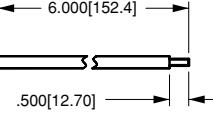
Mechanical Life

100,000 cycles

Operating Temperature

32°F to 85°F (0°C to +85°C)



 .093[2.36] DIA .293[7.44]	 .075[1.90] DIA .250[6.35] .351[8.92]	 6.000[152.4] .500[12.70]
SOLDER LUG	.250 TAB (Q.C.) (Momentary ON only)	INTEGRATED WIRE LEAD (no exposed conductors)
TERMINAL TYPE		


P27A

1
Base Part Number

BL

3
Button Color

1 BASE PART NUMBER: SERIES/POLES/CIRCUITRY/RATING/TERMINATION

Single Pole

3A 250VAC, 6A 125 VAC, 3/4A 125V

OFF - (ON)

ON - (OFF)

solder lug

P27A

P27L

.250 tab

P27B

-

wire leads

P27F

P27T

3 CONCAVE NYLON BUTTON COLOR

BL

RD

WH

black

red

white

NOTES

() Indicates momentary function.

641-Series Pushbutton Switches



The single or double pole 641-Series represent the most compact offerings of our pushbutton switch line. Rugged metal construction, self cleaning contacts and stiff actuation force (3-3 1/2 lbs. typical) have made these switches ideal for most “foot pedal” type applications. These alternate action switches fit a standard .500” mounting hole, have termination options including solder lug, wire lead and PC, and are popular within the Music Industry and Audio-visual Markets.

Dielectric Strength

UL/CSA: 1000V - live to dead metal parts and opposite polarity.

Electrical Life

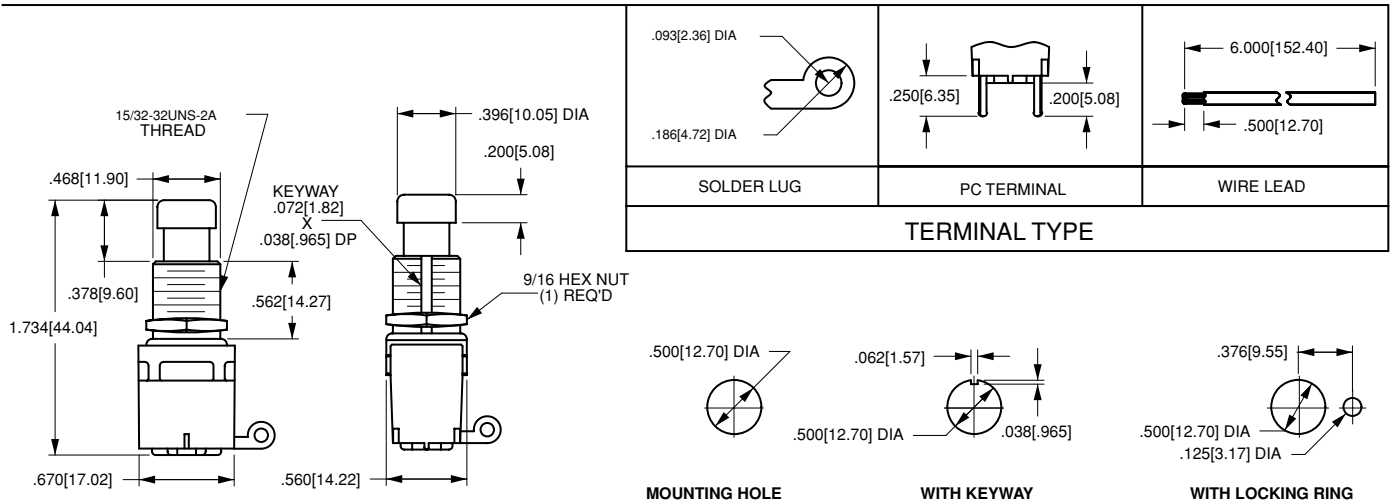
25,000 cycles

Mechanical Life

100,000 cycles

Operating Temperature

32°F to 185°F (0°C to +85°C)



64111210

¹
Part Number

1 PART NUMBER: SERIES/POLES/CIRCUITRY/RATING/TERMINATION

Single Pole

2A 250VAC, 5A 125VAC

solder lug	PC term.	wire leads.	
64111210	64111212	64111215	ON-OFF
64111220	64111222	64111225	ON-ON

Double Pole

solder lug	PC term.	wire leads.
64112210	64112212	64112215
64112220	64112222	64112225

110-Series Pushbutton Switches



The 110-Series provides a compact yet rugged solution to general purpose switch needs. Alternate action, metal construction and stiff (6-8lb.) actuation force have combined to make this switch a pillar in the Music Industry and Audiovisual Markets. This versatile switch is available in maintained and momentary circuits with a variety of termination options.

Dielectric Strength

UL/CSA: 1000V - live to dead metal parts & opposite polarity

Electrical Life

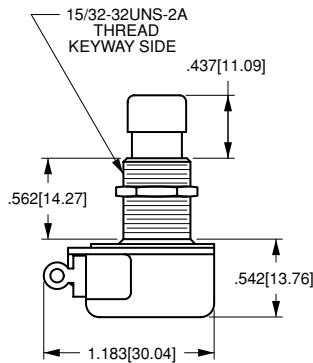
25,000 cycles

Mechanical Life

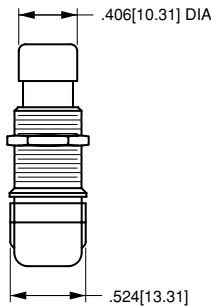
100,000 cycles

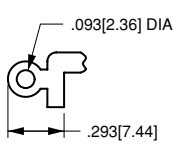
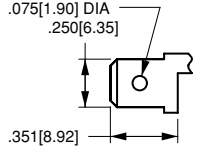
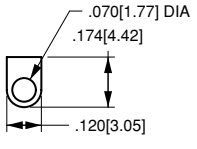
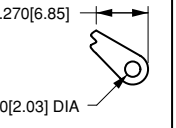
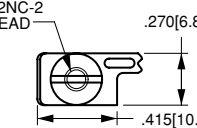
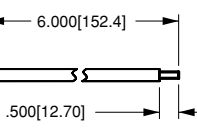
Operating Temperature

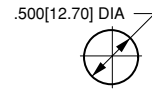
32°F to 185°F (0°C to 85°C)



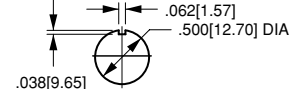
NOTE:
KEYWAY
.072[1.82] X .038[.965] DP



 .093[2.36] DIA .293[7.44]	 .075[1.90] DIA .250[6.35] .351[8.92]	 .070[1.77] DIA .174[4.42] .120[3.05]
SOLDER LUG	.250 TAB (Q.C.) (SPST only)	SOLDER LUG (bottom)
TERMINAL TYPE		
 .270[6.85] .080[2.03] DIA	 #6-32NC-2 THREAD .270[6.86] .415[10.54]	 6.000[152.4] .500[12.70]
END TERMINAL	SCREW (ASSEMBLED) (SPST ONLY)	INTEGRATED WIRE LEAD (no exposed conductors)



MOUNTING HOLE



WITH KEYWAY

110-P

1
Part Number

1 PART NUMBER: SERIES/ACTUATOR/CIRCUITRY/RATING/TERMINATION

Single Pole
3A 250V, 6A 125V

OFF-ON

OFF-(ON)

ON-(OFF)

5A 250V, 10A 125V, 1/4 HP 125V

OFF-ON

1A 250V, 3A 125V

ON-ON

ON-(ON)

Double Pole
1A 250V, 3A 125V

OFF-ON

OFF-(ON)

ON-(OFF)

ON-ON

ON-(ON)

1 ON - 1 OFF (2 circuit)

1 (ON) - 1 (OFF) (2 circuit)

solder lug (end)

solder lug (bottom)

screw terminals

wire leads

110-P

110-BP

110-SP

111-16-P

110-PM-OFF

110-PBM-OFF

110-SPM-OFF

111-PM-OFF

110-PM-ON

110-PBM-ON

110-SPM-ON

111-PM-ON

160H-P

160H-BP

160H-SP

160H-AP

112-P

-

-

112-PA

112-PM

-

-

112-PAM

216-PP

-

-

216-PPA

216-PM-OFF

-

-

216-PAM-OFF

216-PM-ON

-

-

216-PAM-ON

316-PP

316-B-PP

-

316-PPA

316-PM

316-B-PM

-

316-PAM

516-PP

-

-

516-PPA

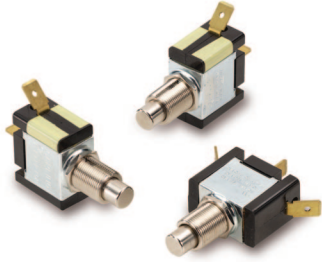
516-PM

-

-

516-PAM

P-Series Pushbutton Switches



These rugged pushbutton-type switches feature international approvals, ratings to 20A 125VAC and a heavy actuation force (3-5 lbs. typical) which makes this switch ideal for use as a “foot-pedal” switch. These switches have become mainstays for canister Vacuum Cleaner applications. The metal bushing and plunger construction enables this alternate action switch to withstand the rigors of most any stringent pushbutton application.

Dielectric Strength

UL/CSA: 1000 - live to dead metal parts & opposite polarity
TUV: 4000V - live to dead metal parts; 1250V - opposite polarity across open contacts

Electrical Life

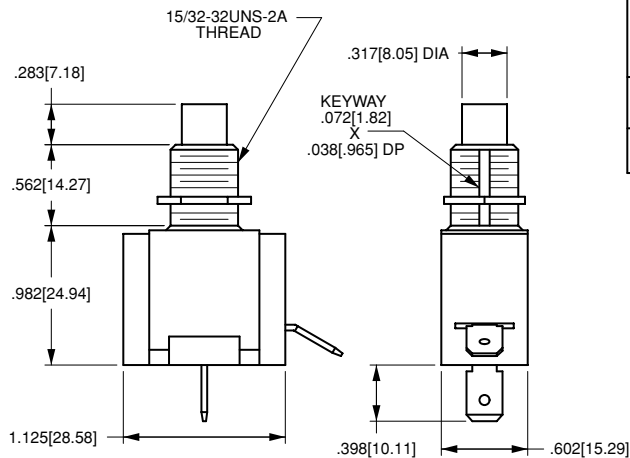
50,000 cycles

Mechanical Life

100,000 cycles

Operating Temperature

0°F to 85°F (32°C to 85°C)



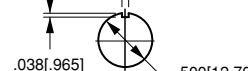
	#6-32NC-2 THREAD	6.000[152.4]
.250 TAB (Q.C.)	SCREW (ASSEMBLED)	INTEGRATED WIRE LEAD (no exposed conductors)
TERMINAL TYPE		

.500[12.70] DIA



MOUNTING HOLE

.062[1.57]



WITH KEYWAY

PA341

¹
Part Number

1 PART NUMBER: SERIES/ACTUATOR/CIRCUITRY/RATING/TERMINATION

	.250 tab	screw terminals	wire leads
10A 250VAC, 15A 125VAC, 3/4 HP 120-240 VAC¹			
ON-OFF	PA341	PA344	PA345
ON-ON	PB341	PB344	PBA345
10A 250VAC, 20A 125VAC, 1 1/2 HP 120-240 VAC¹			
ON-OFF	PA301	PA304	PA305
ON-ON	PB301	PB304	PB305
10A 250VAC, 15A 125VAC, 10(6)a 250 VACu, T85²			
ON-OFF	PA951	PA954	PA955

NOTES

- Additional ratings available. Consult factory.
- UL, CSA & TUV approved.

PP-Series Toggle Switches



The new PP-Series plastic pushbutton switches are heavy-duty, single pole switches with wire leads. They are alternate action, available in single throw construction, with AC ratings up to 15 amps. Both bushing and bracket are made out of nylon. These high current switches are popular within the Appliance market.

Dielectric Strength

UL/CSA: 1000V - live to dead metal parts & opposite polarity

Electrical Life

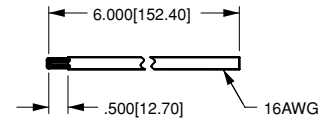
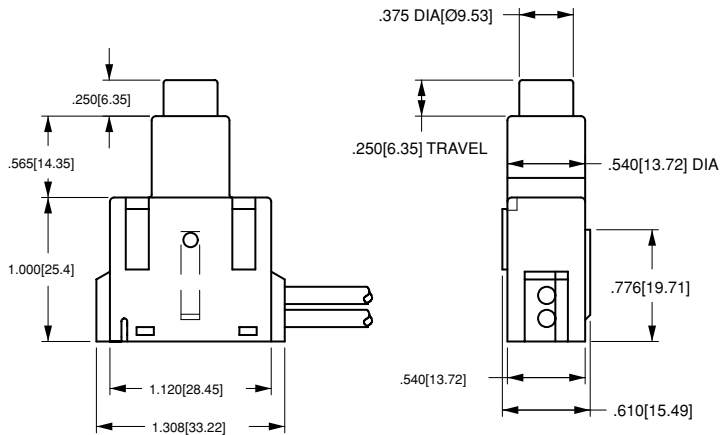
50,000 cycles

Mechanical Life

100,000 cycles

Operating Temperature

32°F to 185°F (0°C to 85°C)



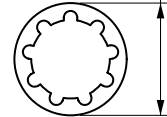
INTEGRATED WIRE LEAD
(NO EXPOSED CONDUCTORS)

TERMINAL TYPE

.550[13.97] DIA

MOUNTING HOLE

.781[19.84] MAX.



FASTENER
FASTENER THICKNESS .010

OPTIONAL FASTENER

PPA525-AC

¹
Part Number

1 PART NUMBER: SERIES/ACTUATOR/CIRCUITRY/RATING/TERMINATION

10A 250VAC, 15A 125VAC, 3/4HP 125-250VAC
ON-OFF
10A 250VAC, 15A 125VAC
ON-OFF

screw terminals
PPA525-AC
PAA515-AC

R135-Series Rotary Switches



The R135 and R135A-Series rotary switches are single pole, single throw “L” rated up to 3A, feature an ON-OFF repeating action, and are available with a nylon actuating knob; nylon snap-in bracket or nickel-plated brass bushing. These switches are typically used to control lighting functions.

Dielectric Strength

UL/CSA:

1000V - live to dead metal parts

Electrical Life

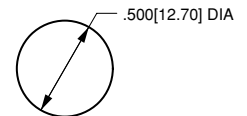
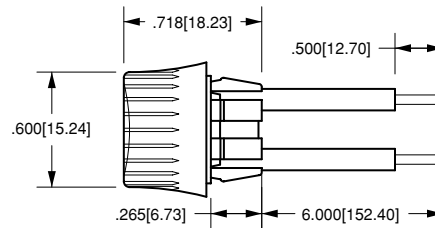
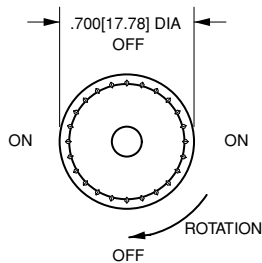
100,000 cycles

Mechanical Life

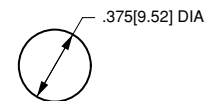
100,000 cycles

Operating Temperature

32°F to 185°F (0°C to 85°C)



NYLON BEZEL MOUNTING HOLE
Snaps into .500[12.70] Dia. hole
Panel Thickness: .020[.508] to .078[1.98]



THREADED BUSHING MOUNTING HOLE
Fits into .375[9.52] Dia. hole
Bushing Length: .312[7.92]

R135-A - BL

¹
Base Part Number

²
Knob
Color

1 BASE PART NUMBER: SERIES/CIRCUITRY/RATING/TERMINATION
1.5A 250 VAC; 3A 125 VAC L; 5A 12 VDC

OFF-ON repeating .375 threaded bushing
OFF-ON repeating nylon snap-in bezel

Wire Leads
R135
R135-A

2 KNOB COLOR¹
BL black

WH white

NOTES

Standard Wire Leads are 6" long, stripped 1/2" black. If different length required, please specify at the end of the part number. ex. R135-A-BL/20"

Panel Cut-Out Recommendations: For sheet metal panels, switch must enter panel in same direction as the punch. Burr on bottom. Test cut hole in actual material.

¹ Custom colors available. Consult factory.

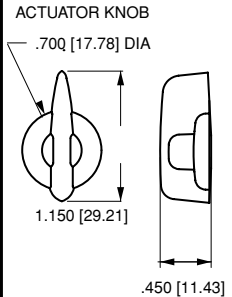
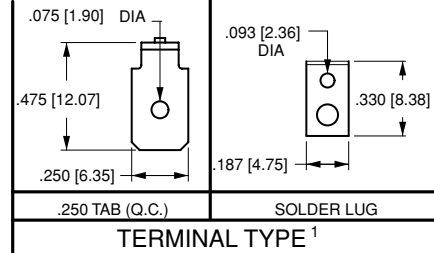
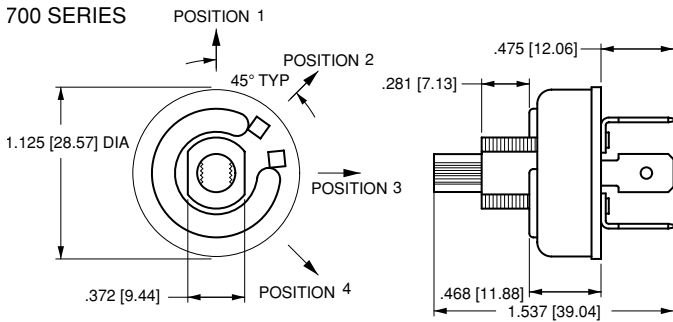
700/800-Series Rotary Switches



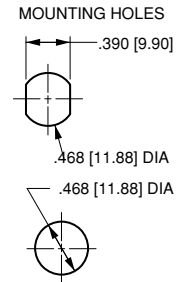
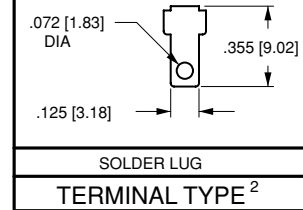
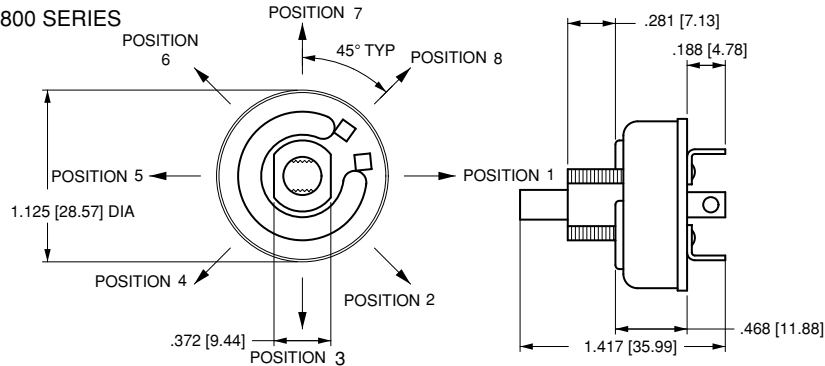
The 700 and 800-Series are single pole multi-position, general purpose rotary switches. These switches feature a nylon actuator in a metal clad construction along with a self-cleaning silver plated contact design. The 700 and 800-Series are typically used in applications requiring multi-position speed controls, such as electric fans.

Dielectric Strength:
UL, CSA 1,000V (minimum)
Insulation Resistance:
100 Megohms (minimum)
Base Material:
Steel/Zinc Plate
Actuator Material:
Brass/Nickel Plate

700 SERIES



800 SERIES



700-1A

BL

¹
Base Part Number

²
Actuator
Color

1 BASE PART NUMBER: SERIES/POLES/CIRCUITRY/RATING¹/TERMINATION^{1,2}

2A 250VAC; 4A 125VAC; 1A 125V

Solder Lugs	.250 Tabs	Position 1	Position 2	Position 3	Position 4	
-	700-A	OFF	ON	ON	ON	
700-1	700-1A	OFF	ON	-	-	
700-2	700-2A	OFF	ON	ON	ON	repeating 8 positions
700-3	700-3A	OFF	ON	ON	OFF	
700-4	700-4A	OFF	ON	ON	-	
700-5	700-5A	OFF	ON	OFF	-	
700-6	700-6A	-	ON	OFF	ON	
700-7	700-7A	-	ON	ON	-	
700-8	700-8A	-	ON	ON	ON	
700-9	700-9A	OFF	ON	OFF	ON	

3A 250VAC; 6A 125VAC

Switch Positions

		OFF Position	
800-2	2 positions	800-A	1st position
800-3	3 positions	800-A2	2nd position
800-4	4 positions	800-A3	3rd position
800-5	5 positions	800-A4	4th position
800-6	6 positions	800-A5	5th position
800-7	7 positions	800-A6	6th position
800-8	8 positions	800-A7	7th position
		800-A8	8th position

2 ACTUATOR COLOR

BL black

NOTES

- 700-2 and 700-2A feature 8 detent positions.
- 800-Series terminal is a combination solder lug and quick connect.

Whatever your application, our Contura switches deliver the performance you demand

— and the flexibility you need. There's no challenge these sealed switches can't help you address. Especially since they're IP66/IP68 certified, UL1500 recognized, and able to withstand temperatures from -40°C to +85°C. Never have such rugged switches been available in such attractive packages. A dazzling array of light, lens and legend options on several actuator styles, plus countless circuit combinations, and valuable accessories, make our Contura switches the ideal choice.

Maximum Design Options with minimum inventories

Panel redesign is a snap, requiring no tooling change, with our removable interchangeable actuators. A unique balance between aesthetics and functionality.

Withstands Extreme Temperatures

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

Seals out water, dust and debris

Dual seal protection locks out elements. Certified to IP66/IP68.

Clean Connections

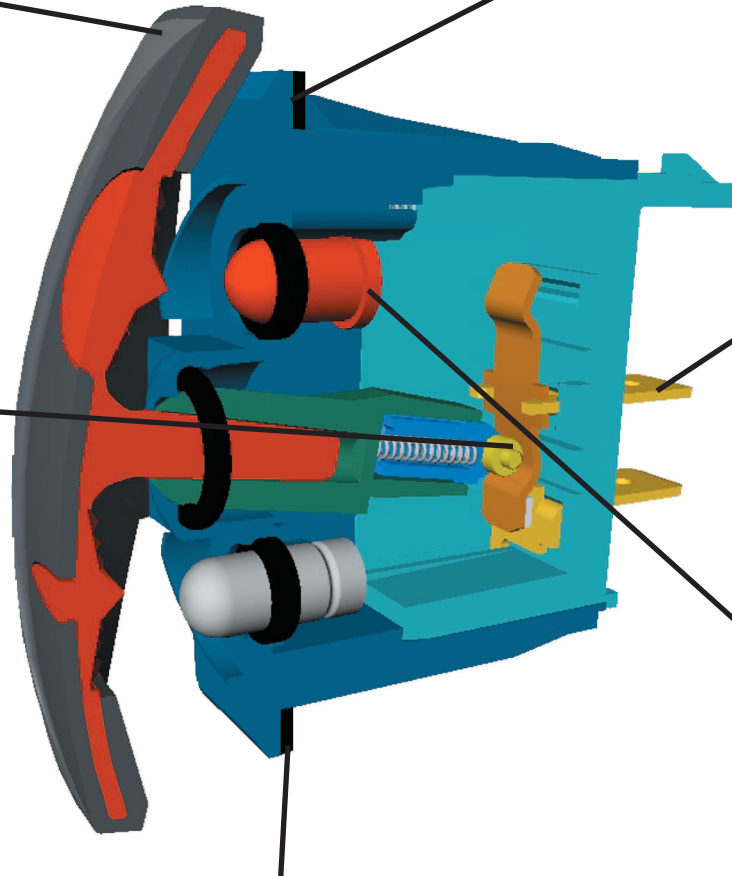
Offered in both eight and ten terminal base options. AMP & Packard compatible connectors available.

Multiple Lighting Options

Incandescent lamps & LED illumination. Our LED illumination is offered in a wide array of light intensities, colors, as well as dual level illumination and flashing options.

Optional Panel Seal

Prevents water/dust egress behind panel.



V-Series Contura Switches

V-Series switches offer countless unique options including choices for ratings, colors, illuminations and symbols. These switches feature removable actuators in a choice of actuator styles and colors, and are available in single or double pole configurations. The V-Series switches can be illuminated with either square, oval and/or bar shaped lenses.



Contura II

The Contura II actuators are constructed of thermoplastic polycarbonate, and are offered with either a hard nylon overlay, or a “soft-touch” elastomer overlay. The Contura II incorporates an aesthetic design of two rows of raised “bumps” on the top and bottom of the rocker.



Contura III

The Contura III actuators are constructed of thermoplastic polycarbonate, and are offered with either a hard nylon overlay, or a “soft-touch” elastomer overlay. The Contura III incorporates three rows of bars on the top and bottom of the rocker.



Contura IV

The Contura IV’s “Shape to create a Shape” actuator supports the designer, by working with the curves, contours and advanced styling of the latest panel designs, flowing with these advanced curves and radii. This actuator style fits on the Contura II & III flush bracket/bezel.



Contura V

The symmetrically curved Contura V actuator provides the perfect complement to the Contura IV’s “Shape to create a Shape” design concept. It can be mounted in between two Contura IV’s, by itself, or in groups. This actuator style is available with all flush style mounting brackets.



Contura X

The raised bracket/bezel on the Contura X helps prevent inadvertent actuation of the rocker, as well as preventing debris from being trapped under the actuator. The conventionally designed actuators are available with one-piece bar lenses, or square lenses in either one or two part construction with backlit legends, for increased durability of lens symbols.



Contura XI

The raised bracket/bezel on the Contura XI helps prevent inadvertent actuation of the rocker, as well as preventing debris from being trapped under the actuator. The actuators are available with one-piece bar lenses, or square lenses in either one or two part construction with backlit legends, for increased durability of lens symbols.



Contura XII

The Contura XII version incorporates a paddle style handle on the raised bracket/bezel, also used in the Contura X and XI switch. The contoured handle design provides intuitive recognition and ease of operation for a variety of transportation related applications, and is available with all Contura X and XI lens and legend offerings.

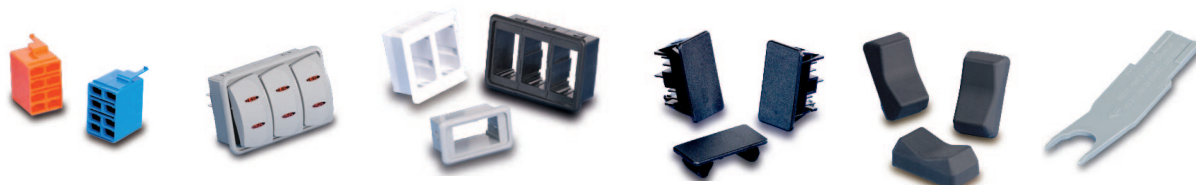


Illuminated Plug

The Illuminated Plug is offered with removable/replaceable lamps, Contura II, V and X styling, and LED illumination. As a critical safety feature, it’s illumination alerts the operator of essential system functions or malfunctions like: oil pressure, high temperature, transmission or other fluid levels, parking brake, or general system malfunction.

V-Series Accessories/Options

Carling Technologies also offers many V-Series accessories including connectors, mounting panels, hole plugs, panel seals, and actuator removal tools.



Electrical

Contact Rating4VA @ 24VDC (MAX) resistive 15 amps, 125 VAC 10 amps, 250 VAC 1/2 HP 125-250 VAC 20 amps, 4-14 VDC 15 amps, 15-28 VDC 10A 14VT 6A 125 VAC L
Dielectric Strength	1500 Volts RMS
Insulation Resistance . . .	50 Megohms
Initial Contact Resistance.	10 milliohms max. @ 4 VDC
Life	50,000- 100,000 cycles circuit dependent
Contacts	Silver cad-oxide, silver tin-oxide, fine silver
Terminals	Brass or copper/silver plate 1/4" (6.3mm) Quick Connect terminations standard. Solder lug, Wire Lead

Mechanical

Endurance	150,000 cycles minimum
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Physical

Lighted	Incandescent - rated 10,000 hours Neon - rated 25,000 hours LED - rated 100,000 hours 1/2 life (LED is internally ballasted for voltages to 24 VDC)
Seals	Internal Optional external gasket panel seal
Base	Polyester blend rated to 125°C with a UL flammability rating of 94 V-O.
Contura II, III, IV, V Actuator	Hard Surface: Basic actuator structure molded of thermoplastic polycarbonate with a hard Nylon 66 thermoplastic surface overlay. Soft Surface: Basic actuator structure molded of thermoplastic polycarbonate with an elastomer overlay.
Contura X, XI, XII Actuator, VP	Nylon 66 Reinforced rated to 105°C
Lens	Polycarbonate rated at 100°C

Actuator Travel (Angular Displacement)

2 position	18°
3 positions	9° from center

Mounting Specifications

Panel Thickness Range	
# of gaskets	Acceptable Panel Thickness
0	.030 to .250 (.76mm to 4.76mm)
1	.030 to .109 & .147 to .157 (.76 to 2.77mm & 3.73 to 3.98mm)
Recommended: No gasket with panel thickness of .032, .062, .093, .125, .187 or .250	

Agency Certifications



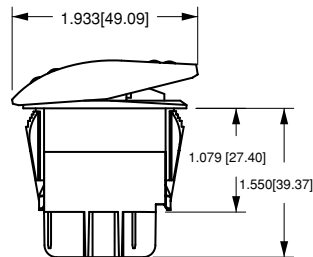
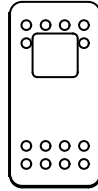
Environmental

Environmental	Sealed version: IP68, in accordance with IEC 529, BS 5490, DIN 400 50 & NFC 20 010. This rating applies to front panel components and signifies protection against dust and the prolonged effects of immersion under pressure. The standard test for immersion under pressure requires submersion under one meter of water for 30 minutes. The V-Series switch has exceeded these parameters, having been actuated and illuminated during submersion. NOTE: Sealed switch with optional panel gasket will meet IP67 rating.	
Corrosion	Flowing Mixed Gas (FMG) Class III 3 year accelerated exposure per ASTM B-827, B-845 Silver and gold contacts	
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 seconds 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. Sealed version only.	
Dust	Per Mil-Std 810C, Method 510.2 Air Velocity 300 ±200 Feet/Min, Test Duration 16 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	
Ignition Protection	All Contura switches with sealed construction meet the requirements of UL1500/ISO8846 for ignition protection, in addition to conformance with EC directive 94/25/EC for marine products.	

Dimensional Specifications: in. [mm]

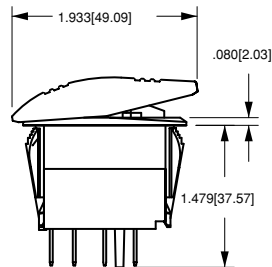
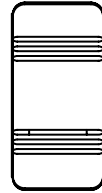
CONTURA II STYLE

SHOWN WITH
SQUARE LENS



**8 TERMINAL
BASE
W/BARRIERS**

CONTURA III STYLE

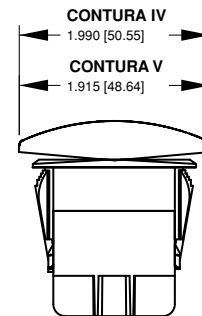
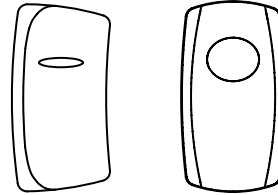


**8 TERMINAL
BASE
W/O BARRIERS**

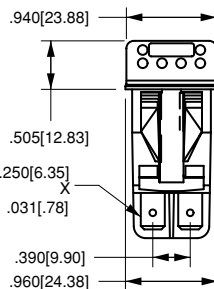
CONTURA IV & V STYLE

IV - SHOWN WITH
BAR LENS

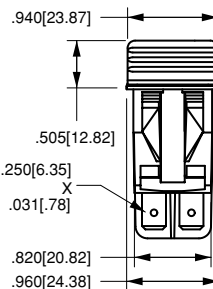
V - SHOWN WITH
ROUND LENS



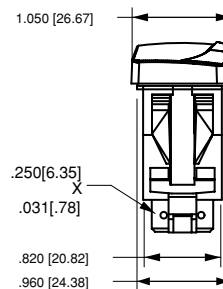
**10 TERMINAL BASE
W/BARRIERS**



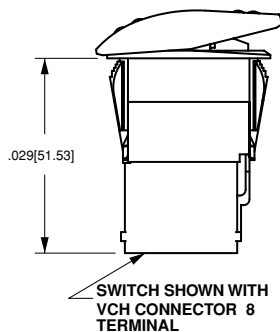
**8 TERMINAL BASE
W/BARRIERS**



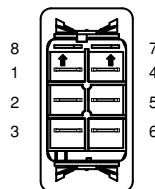
**10 TERMINAL BASE
W/O BARRIERS**



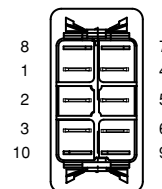
**10 TERMINAL BASE
W/O BARRIERS**



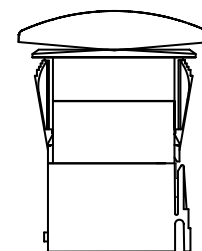
**SWITCH SHOWN WITH
VCH CONNECTOR 8
TERMINAL**



**BOTTOM VIEW
TERMINAL
ARRANGEMENT
8 TERMINAL BASE**



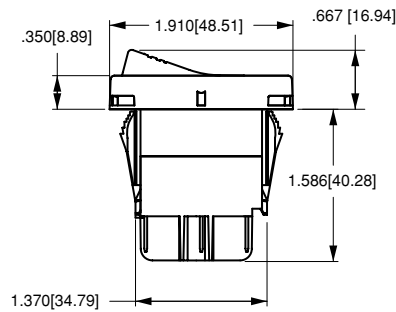
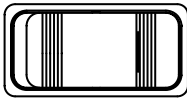
**BOTTOM VIEW
TERMINAL
ARRANGEMENT
10 TERMINAL BASE**



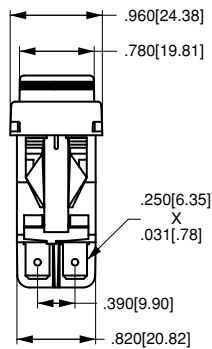
**SWITCH SHOWN WITH
VC1 CONNECTOR 10
TERMINAL**

Dimensional Specifications: in. [mm]

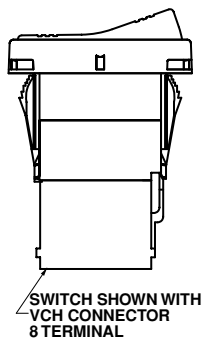
CONTURA X STYLE
SHOWN WITH RAISED BRACKET



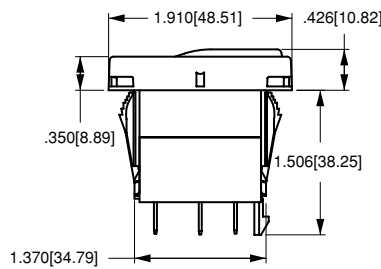
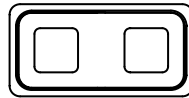
**8 TERMINAL BASE
W/BARRIERS**



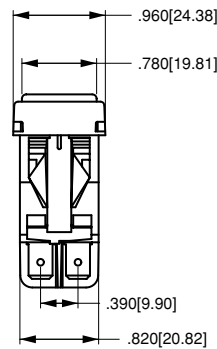
**8 TERMINAL BASE
W/BARRIERS**



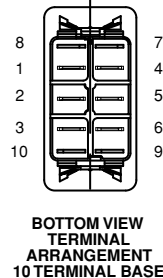
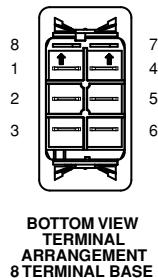
CONTURA XI STYLE
SHOWN WITH RAISED
BRACKET AND TWO SQUARE
LENSES



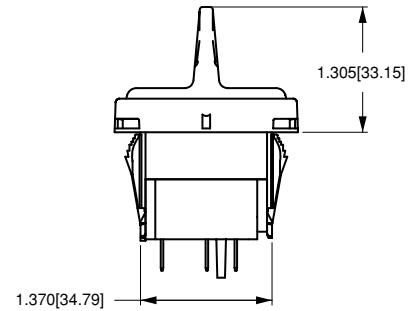
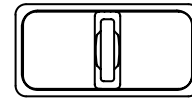
**10 TERMINAL BASE
W/O BARRIERS**



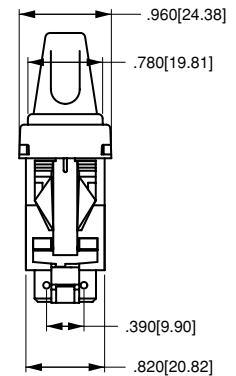
**10 TERMINAL BASE
W/BARRIERS**



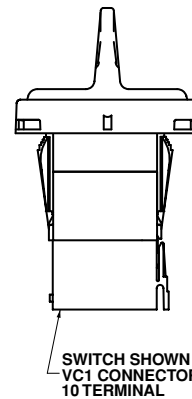
CONTURA XII STYLE
SHOWN WITH PADDLE
ACTUATOR



**8 TERMINAL BASE
W/O BARRIERS**



**10 TERMINAL
BASE
W/O BARRIERS**



V	1	D	A	B	T	O	B	-	A	R	B	00	-	0	00
1 Series	2 Circuit	3 Rating	4 Termination	5 Illumination	6 Lamp	7 Lamp	8 Bracket		9 Actuator	10 Lens	11 Color	12 Legend		13 Legend Orientation	14 Actuator Lens Legend

1 SERIES

V

2 CIRCUIT

Terminal Connections as viewed from bottom of switch:
8 terminal 10 terminal
8 - 7 8 - 7
1 - 4 1 - 4
2 - 5 2 - 5
3 - 6 3 - 6
10 - 9

() - momentary

SP - single pole - uses terminals 1, 2 & 3.
DP - double pole uses terminals 1, 2, 3, 4, 5 & 6.
Terminals 7, 8, 9 & 10 for lamp circuit only.

Position:

SP	DP	2 & 3, 5 & 6	Connected Terminals	1 & 2, 4 & 5
1 A		(ON)	NONE	OFF
2 B		(ON)	NONE	OFF
3 C		(ON)	NONE	(OFF)
4 D		(ON)	NONE	(ON)
5 E		(ON)	NONE	(ON)
6 F		(ON)	OFF	(ON)
7 G		(ON)	OFF	(ON)
8 H		(ON)	OFF	(ON)

SPECIAL CIRCUITS

	2 & 3	2 & 3, 5 & 4	5 & 4
H*	2 & 3	2 & 3	OFF
G*	2 & 3, 5 & 6	2 & 3	1 & 2
S*	2 & 3, 5 & 6	2 & 3	OFF
M*	(2 & 3, 5 & 6)	2 & 3	1 & 2
R*	(2 & 3, 5 & 6)	2 & 3	5 & 1
E*	5 & 6	5 & 3	

* Jumper between terminals 2 & 5 for circuits H, G, & M are specified in selection 4.
External jumper between terminals 2 & 4 for circuit E are provided by customer. Circuit E may be used for SP OFF-ON-ON circuit. Circuits H, M & E not available with ratings 5 - 9.

3 RATING^{3,5}

1	.4VA @ 28VDC Resistive
4	10A 250VAC 1/2 HP, 15A 125VAC 1/2 HP, No Listings
5	10A 250VAC 1/2 HP, 15A 125VAC 1/2 HP, UL Recognized, CSA Certified
8*	10A 250VAC, 15A 125VAC, 1/2 HP 125-250VAC, 12(2)A 250 VAC μ T85
9*	10A 250VAC, 15A 125VAC, 1/2 HP 125-250 VAC, 12(6)A 250 VAC T85
B	15A 24V
C	20A 18V
D	20A 12V

* Ratings 8 & 9 are UL, CSA, VDE, DEMKO, SEMKO, NEMKO, FIMKO & BEAB certified, require terminations A or B for double pole circuits, & are not available with illumination circuits 4, 8, D, J, N, & T or with wire lead or solder lug terminations. Circuits 1, 4, A & D are not available with rating 8. Ratings 8 & 9 must specify lamp code 2 (250VAC neon).

4 TERMINATION/BASE STYLE

8 term	10 term	Termination	Jumper
1	2	.250 TAB (QC) no barriers	No
A	B	.250 TAB (QC) with barriers	No
J	K	.250 TAB (QC) no barriers	Yes T2 to 5
3	4	Solder Lug no barriers	No
C	D	Solder Lug	No
5	6	Wire Leads no barriers	No
E	F	Wire Leads	No

Note: Codes J & K for circuits H, G & M. Ratings 8 & 9 require terminations A or B only.

5 ILLUMINATION & SWITCH SEALING

Lamp #1: above terminals 1 & 4 end of switch.; Lamp #2 above terminals 3 & 6 end of switch.
Positive (+) and negative (-) symbols apply to LED lamps only

Sealed	Unsealed	Lamps	Actuator Lens position when Illuminated	Lamp wired to Terminals
S	0	None		
A	1	# 1	Independent	8+ 7-
B	2	# 1	Down	3+ 7-
C	3	# 2	Up	3+ 7-
D	4	# 1	Down	3+ 7-
E	5	# 1	Down	1+ 7-
F	6	& # 2	Up	3+ 7-
G	7	# 1	Independent	8+ 7-
H	8	& # 2	Up	3+ 6-
I	9	# 1	Independent	8+ 7-
J	10	# 2	Up	3+ 7-
K	11	# 1	Independent	8+ 7-
L	12	& # 2	Up	10+ 9-
M	13	# 1	Down	3+ 6-
N	14	# 2	Up	3+ 6-
P	15	# 1	Down	1+ 4-
U	16	& # 2	Up	1+ 4-
V	17	# 1	Independent	3+ 6-
W	18	# 2	Independent	8+ 7-
X	19	# 1	Independent	10+ 9-
Y	20	# 2	Independent	10+ 9-

Selections for Single Pole Switches Only:

Selections for Double Pole Switches Only:

6,7 LAMP (same coding for both selections)

Selection 6: above terminals 1 & 4; Selection 7: above terminals 3 & 6

No lamp	0
Neon	1 125VAC 2 250VAC
Incandescent	4 3V 5 6V 6 12V 7 18V 8 24V
LED*	
2VDC	Red A Amber L Green F Red R
6VDC	B M N H S
12VDC	C P J T V
24VDC	D

* Consult factory for "daylight bright" LED options. Typical current draw for LED is 20ma.

8 FLUSH BRACKET COLOR¹, PANEL SEAL

No Seal	Black B	White W	Gray G
One Seal	C	Y	H

9 ACTUATOR

No Actuator	0
Contura II	A B C D
Contura III	

Actuator orientation above terminals:

10 LENS*

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
1	6
2	7
3	8
4	9
5	A
	B
	C
	D
	E
	F
	G
	H
	I
	J
	K
	L
	M
	N
	O
	P
	Q
	R
	S
	T
	U
	V
	W
	X
	Y

11 ACTUATOR COLOR¹ AND TEXTURE

0 - No Actuator	
Soft Surface	Black B Gray G Red R White W
Hard Surface	C H S Y

12 ACTUATOR LENS OR BODY LEGENDS²

00 - No Legend this location/No actuator

11 ON	12 OFF	13 I	14 O
OFF	ON	O	I
15 O O	16 O O	17 O I	18 I O
F N	N F	F	

For additional legend options & codes, see page 69 of this catalog

13 LEGEND ORIENTATION

0 No legend (used with codes 11-18 in selection 12)

1 Orientation 1	
2 Orientation 2	
3 Orientation 3	
4 Orientation 4	

14 ACTUATOR LENS LEGEND²

00 No legend this location / no actuator

(used with codes 11-18 in selection 12) Selection 14 required when switch requires two legends. If the two legends consist of one lens and one body legend, lens legend must be specified in selection 12; body legend specified in selection 14.

For legend options & codes, see page 69 of this catalog

NOTES

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

- Custom colors are available. Consult factory.
- Body legends not available on Soft surface actuators; White imprinting is standard on black actuators; Black imprinting is standard on white, red and gray actuators; Custom colors are available, consult factory.
- Additional ratings available. See page 57.
- Contura II available with two square lenses. Consult factory for details.
- Rating 9 only available with circuits 1, 4, A & D.

V	1	D	A	S	W	O	B	-	A	Z	E	00	-	0
1 Series	2 Circuit	3 Rating	4 Termination	5 Illumination	6 Lock	7 Lamp	8 Bracket		9 Actuator	10 Lens	11 Function	12 Legend		13 Legend Orientation

1 SERIES

V

2 CIRCUIT

Terminal Connections as viewed from bottom of switch:

8 terminal	10 terminal
8 - 7	8 - 7
1 - 4	1 - 4
2 - 5	2 - 5
3 - 6	3 - 6
10 - 9	

() - momentary

SP - single pole - uses terminals 1, 2 & 3.
DP - double pole uses terminals 1, 2, 3, 4, 5 & 6.
Terminals 7, 8, 9 & 10 for lamp circuit only.

Position:	1	2	3
SP	2 & 3, 5 & 6	Connected	1 & 2, 4 & 5
1	A ON	NONE	OFF
4	D ON	NONE	ON
6	J ON	OFF	ON
7	K ON	OFF	(ON)
8	L (ON)	OFF	(ON)
9	N OFF	NONE	ON

SPECIAL CIRCUITS	2 & 3	2 & 3, 5 & 4	5 & 4
H*	2 & 3	2 & 3	OFF
G*	2 & 3, 5 & 6	2 & 3	1 & 2
S	2 & 3, 5 & 6	2 & 3	OFF
M*	(2 & 3, 5 & 6)	2 & 3	1 & 2
R	(2 & 3, 5 & 6)	2 & 3	5 & 1
E*	5 & 6	5 & 3	5 & 1

*Jumper between terminals 2 & 5 for circuits H, G, & M are specified in selection 4.

External jumper between terminals 2 & 4 for circuit E are provided by customer. Circuit E may be used for SP OFF-ON-ON circuit. Circuits H, M & E not available with ratings 5 - 9.

3 RATING

1	.4VA @ 28VDC Resistive
4	10A 250VAC 1/2 HP, 15A 125VAC 1/2 HP, No Listings
5	10A 250VAC 1/2 HP, 15A 125VAC 1/2 HP, UL Recognized, CSA Certified
8*	10A 250VAC, 15A 125VAC, 1/2 HP 125-250VAC, 12(2)A 250 VAC μ T85
9*	10A 250VAC, 15A 125VAC, 1/2 HP 125-250 VAC, 12(6)A 250 VAC T85
B	15A 24V
C	20A 18V
D	20A 12V

* Ratings 8 & 9 are UL, CSA, VDE, DEMKO, SEMKO, NEMKO, FIMKO & BEAB certified, require terminations A or B for double pole circuits, & are not available with illumination circuits 4, 8, D, J, N, & T or with wire lead or solder lug terminations. Circuits 1, 4, A & D are not available with rating 8. Rating 9 is only available with circuits 1, 4, A & D. Ratings 8 & 9 must specify lamp code 2 (250VAC neon).

4 TERMINATION/BASE STYLE

8 term	10 term	Termination	Jumper
1	2	.250 TAB (QC) no barriers	No
A	B	.250 TAB (QC) with barriers	No
J	K	.250 TAB (QC) no barriers	Yes T2 to 5
3	4	Solder Lug no barriers	No
C	D	Solder Lug	No
5	6	Wire Leads no barriers	No
E	F	Wire Leads	No

Note: Codes J & K for circuits H, G & M. Ratings 8 & 9 require terminations A or B only.

5 ILLUMINATION & SWITCH SEALING

Lamp #1 above terminals 1 & 4 end of switch.; Lamp #2 above terminals 3 & 6 end of switch. Positive (+) and negative (-) symbols apply to LED lamps only

Sealed	Unsealed	Lamps	Actuator Lens position when Illuminated	Lamp wired to Terminals
S	0	None		
C	3	# 2	Up	3+ 7-
H	Z	# 2	Independent	8+ 7-
M	R	# 2	Up	3+ 6-

Selections for Double Pole Switches Only:

6 LOCK

Lock above terminals 1 & 4 end of switch.
W lock

7 LAMP

Lamp above terminals 3 & 6 end of switch.

No lamp	0
Neon	1 125VAC 2 250VAC
Incandescent	4 3V 5 6V 6 12V 7 18V 8 24V
LED*	
2VDC	Red A Amber L superbright Green F Red R
6VDC	B M G S
12VDC	C N H T
24VDC	D P J V

* Consult factory for "daylight bright" LED options. Typical current draw for LED is 20ma.

8 FLUSH BRACKET COLOR*, PANEL SEAL

No Seal	Black B	White W	Gray G
One Seal	C	Y	H

9 HARD SURFACE ACTUATOR*

	Black A	Gray B	Red G	White H
Contura II				
Contura III	C	D	E	F

Actuator orientation above terminals: 3,6 1,4

10 LENS

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

Z - No Lens					
Clear	White 8	Amber D	Green J	Red P	Blue V

11 ACTUATOR LOCK FUNCTION AND COLOR*

Lock Color	Up	Down	Up & Down	Center ³
Match Actuator	A	H	R	1
Black	B	J	S	2
White	C	K	T	3
Red	D	L	V	4
Safety Orange	E	M	W	5

12 ACTUATOR LENS OR BODY LEGEND*

00 - No Legend

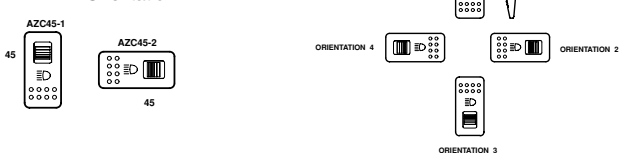
21 OFF	22 ON	23 O	24 I
25 O	26 O	27 O	28 I
F	N		

For additional legend options & codes, see page 69 of this catalog

13 LEGEND ORIENTATION*

0 No legend (used with codes 21-28 in selection 12)

1	Orientation 1
2	Orientation 2
3	Orientation 3
4	Orientation 4



NOTES

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

- Custom colors are available. Consult factory.
- White imprinting is standard on black actuators; Black imprinting is standard on white, red and gray actuators; Custom colors are available, consult factory.
- Only available with 3 position circuits. Center OFF and special circuits only available with center position lock function.
- Additional ratings available. See page 57.

V	1	D	A	B	T	O	B	-	E	R	B	00	-	0	00
1 Series	2 Circuit	3 Rating	4 Termination	5 Illumination	6 Lamp	7 Lamp	8 Bracket		9 Actuator	10 Lens	11 Color	12 Legend		13 Legend Orientation	14 Actuator Lens Legend

1 SERIES

V

2 CIRCUIT

Terminal Connections as viewed from bottom of switch:

8 terminal	10 terminal
8 - 7	8 - 7
1 - 4	1 - 4
2 - 5	2 - 5
3 - 6	3 - 6
	10 - 9

() - momentary

SP - single pole - uses terminals 1, 2 & 3.
DP - double pole uses terminals 1, 2, 3, 4, 5 & 6.
Terminals 7, 8, 9 & 10 for lamp circuit only.

Position:

SP	DP	2 & 3, 5 & 6	Connected Terminals	1 & 2, 4 & 5
1	A	ON	NONE	OFF
2	B	(ON)	NONE	OFF
3	C	ON	NONE	(OFF)
4	D	ON	NONE	ON
5	E	ON	NONE	(ON)
6	F	ON	NONE	ON
7	J	ON	OFF	ON
8	K	ON	OFF	(ON)
	L	(ON)	OFF	(ON)

SPECIAL CIRCUITS

	2 & 3	2 & 3, 5 & 6	2 & 3, 5 & 4	5 & 4
H*		2 & 3	2 & 3	OFF
G*		2 & 3, 5 & 6	2 & 3	1 & 2
S*		2 & 3, 5 & 6	2 & 3	OFF
M*		(2 & 3, 5 & 6)	2 & 3	1 & 2
R*		(2 & 3, 5 & 6)	2 & 3	5 & 1
E*		5 & 6	5 & 3	

*Jumper between terminals 2 & 5 for circuits H, G, & M are specified in selection 4.
External jumper between terminals 2 & 4 for circuit E are provided by customer. Circuit E may be used for SP OFF-ON-ON circuit. Circuits H, M & E not available with ratings 5 - 9.

3 RATING^{4,5}

1	.4VA @ 28VDC Resistive
4	10A 250VAC 1/2 HP, 15A 125VAC 1/2 HP, No Listings
5	10A 250VAC 1/2 HP, 15A 125VAC 1/2 HP, UL Recognized, CSA Certified
8*	10A 250VAC, 15A 125VAC, 1/2 HP 125-250VAC, 12(2)A 250 VAC μ T85
9*	10A 250VAC, 15A 125VAC, 1/2 HP 125-250 VAC, 12(6)A 250 VAC T85
B	15A 24V
C	20A 18V
D	20A 12V

* Ratings 8 & 9 are UL, CSA, VDE, DEMKO, SEMKO, NEMKO, FIMKO & BEAB certified, require terminations A or B for double pole circuits, & are not available with illumination circuits 4, 8, D, J, N, & T or with wire lead or solder lug terminations. Circuits 1, 4, A & D are not available with rating 8. Ratings 8 & 9 must specify lamp code 2 (250VAC neon).

4 TERMINATION/BASE STYLE

8 term	10 term	Termination	Jumper
1	2	.250 TAB (QC) no barriers	No
A	B	.250 TAB (QC) with barriers	No
J	K	.250 TAB (QC) no barriers	Yes T2 to 5
3	4	Solder Lug no barriers	No
C	D	Solder Lug	No
5	6	Wire Leads no barriers	No
E	F	Wire Leads	No

Note: Codes J & K for circuits H, G & M. Ratings 8 & 9 require terminations A or B only.

5 ILLUMINATION & SWITCH SEALING

Lamp #1: above terminals 1 & 4 end of switch.; Lamp #2 above terminals 3 & 6 end of switch.
Positive (+) and negative (-) symbols apply to LED lamps only

Sealed	Unsealed	Lamps	Actuator Lens position when Illuminated	Lamp wired to Terminals
S	0	None		
A	1	#1	Independent	8+ 7-
B	2	#1	Down	3+ 7-
C	3	#2	Up	3+ 7-
D	4	#1	Down	1+ 7-
E	5	#1	Up	1+ 7-
F	6	#1	Independent	3+ 7-
G	7	#1	Up	3+ 6-
H	8	#1	Independent	3+ 7-
U	Y	#1	Independent	8+ 7-
		#2	Independent	10+ 9-
Selections for Single Pole Switches Only:				
J	8	#1	Down	3+ 8-
K	W	#1	Independent	8+ 7-
		#2	Independent	8+ 7-
Selections for Double Pole Switches Only:				
L	9	#1	Down	3+ 6-
M	R	#1	Up	3+ 6-
N	T	#1	Down	1+ 4-
P	V	#1	Up	1+ 4-
		#2	Up	3+ 6-
U	Y	#1	Independent	8+ 7-
		#2	Independent	10+ 9-

6,7 LAMP (same coding for both selections)

Selection 6: above terminals 1 & 4; Selection 7: above terminals 3 & 6

No lamp	0
Neon	1 125VAC 2 250VAC
Incandescent	4 3V 5 6V 6 12V 7 18V 8 24V
LED*	
2VDC	Red A Amber L superbright Green F Red R
6VDC	B M G S
12VDC	C N H T
24VDC	D P J V

* Consult factory for "daylight bright" LED options. Typical current draw for LED is 20ma.

8 FLUSH BRACKET COLOR*, PANEL SEAL

No Seal	Black B White W Gray G
One Seal	C Y H

9 ACTUATOR

No Actuator
Contura IV, left orientation
Contura IV, left orientation, laser etched
Contura IV, right orientation
Contura IV, right orientation, laser etched

0
E
T
F
R



Actuator orientation above terminals:

3,6 1,4

10 LENS

0 - No Actuator	White	Z - No Lens	Amber	Green	Red	Blue
1	6	B	G	M	T	
2	7	C	H	N	U	
3	8	D	J	P	V	
4	9	E	K	R	W	
5	A	F	L	S	Y	

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

11 ACTUATOR COLOR^{1,6,7}

No Actuator 0 Black C Gray H Red S White Y Nickel D Pewter E

12 ACTUATOR LENS OR BODY LEGEND²

00 - No Legend this location/No actuator

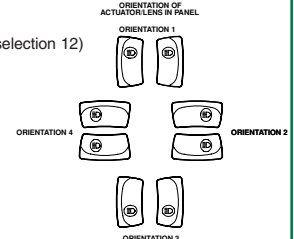
11 ON	12 OFF	13 I	14 O
OFF	ON	O	I
15 O O	16 O O	17 O I	18 I O
F N	N F	F	

For additional legend options & codes, see page 69 of this catalog

13 LEGEND ORIENTATION³

0 No legend (used with codes 11-18 in selection 12)

1 Orientation 1
2 Orientation 2
3 Orientation 3
4 Orientation 4



14 ACTUATOR LENS LEGEND

00 No legend this location / no actuator

(used with codes 11-18 in selection 12) Selection 14 required when switch requires two legends. If the two legends consist of one lens and one body legend, lens legend must be specified in selection 12; body legend specified in selection 14.

NOTES

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

- Custom colors are available. Consult factory.
- White imprinting is standard on black actuators; Black imprinting is standard on white, red and gray actuators; Custom colors are available, consult factory.
- Gloss brow is on left side of E actuator and right side of F actuator.
- Additional ratings available. See page 57.
- Rating 9 only available with circuits 1, 4, A & D.
- Laser etched rocker only available with lens code Z & actuator colors black, nickel or pewter.
- Pewter and nickel colors only available with laser etched actuator.

V 1 D A S W O B - J Z E 00 - 0

1 Series 2 Circuit 3 Rating 4 Termination 5 Illumination 6 Lock 7 Lamp 8 Bracket 9 Actuator 10 Lens 11 Function 12 Legend 13 Legend Orientation

1 SERIES

V

2 CIRCUIT³

Terminal Connections as viewed from bottom of switch:

8 terminal	10 terminal
8 - 7	8 - 7
1 - 4	1 - 4
2 - 5	2 - 5
3 - 6	3 - 6
10 - 9	

() - momentary

SP - single pole - uses terminals 1, 2 & 3.
DP - double pole uses terminals 1, 2, 3, 4, 5 & 6.
Terminals 7 & 8 for lamp circuit only.
Terminals 9 & 10 are not used with locking style switches.

Position:	1	2	3
SP	DP	2 & 3, 5 & 6	Connected Terminals 1 & 2, 4 & 5
1	A	ON	NONE
4	D	ON	NONE
6	J	ON	OFF
7	K	ON	OFF
8	L	(ON)	OFF
9	N	OFF	NONE

3 RATING⁴

- 1 .4VA @ 28VDC Resistive
- 4 10A 250VAC 1/2 HP, 15A 125VAC 1/2 HP, No Listings
- 5 10A 250VAC 1/2 HP, 15A 125VAC 1/2 HP, UL Recognized, CSA Certified
- 8* 10A 250VAC, 15A 125VAC, 1/2 HP 125-250VAC, 12(2)A 250 VAC μ T85
- 9* 10A 250VAC, 15A 125VAC, 1/2 HP 125-250 VAC, 12(6)A 250 VAC T85
- B 15A 24V
- C 20A 18V
- D 20A 12V

* Ratings 8 & 9 are UL, CSA, VDE, DEMKO, SEMKO, NEMKO, FIMKO & BEAB certified, require terminations A or B for double pole circuits, & are not available with illumination circuits 4, 8, D, J, N, & T or with wire lead or solder lug terminations. Circuits 1, 4, A & D are not available with rating 8. Rating 9 only available with circuits 1, 4, A & D. Ratings 8 & 9 must specify lamp code 2 (250VAC neon).

4 TERMINATION/BASE STYLE

8 term	10 term	Termination	Jumper
1	2	.250 TAB (QC) no barriers	No
A	B	.250 TAB (QC) with barriers	No
J	K	.250 TAB (QC) no barriers	Yes T2 to 5
3	4	Solder Lug no barriers	No
C	D	Solder Lug	No
5	6	Wire Leads no barriers	No
E	F	Wire Leads	No

Note: Codes J & K for circuits H, G & M. Ratings 8 & 9 require terminations A or B only.

5 ILLUMINATION & SWITCH SEALING

Lamp above terminals 3 & 6 end of switch.

Positive (+) and negative (-) symbols apply to LED lamps only

Sealed	Unsealed	Lamps	Actuator Lens position when Illuminated	Lamp wired to Terminals
S	0	None		
C	3	# 2	Up	3+ 7-
H	Z	# 2	Independent	8+ 7-
M	R	# 2	Up	3+ 6-

6 LOCK

Lock above terminals 1 & 4 end of switch.

W lock

7 LAMP

Lamp above terminals 3 & 6 end of switch.

No lamp	0
Neon	1 125VAC 2 250VAC
Incandescent	4 3V 5 6V 6 12V 7 18V 8 24V
LED*	
2VDC	Red A Amber L superbright Green F Red R
6VDC	B M G S
12VDC	C N H T
24VDC	D P J V

* Consult factory for "daylight bright" LED options. Typical current draw for LED is 20ma.

8 FLUSH BRACKET COLOR⁵, PANEL SEAL

No Seal	Black B	White W	Gray G
One Seal	C	Y	H

9 HARD SURFACE ACTUATOR

Orientation	Black J	Gray K	Red L	White M
Left				
Right	N	P	R	S



Actuator orientation above terminals: 3,6 1,4

10 LENS⁶

Z - No Lens						
Clear	White B	Amber C	Green D	Red G	Blue F	Bar lens
A	H	J	K	L	M	Oval Lens

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

11 ACTUATOR LOCK FUNCTION AND COLOR¹

Lock Color	Up	Down	Up & Down	Center ³
Match Actuator	A	H	R	1
Black	B	J	S	2
White	C	K	T	3
Red	D	L	V	4
Safety Orange	E	M	W	5
Gray	F	G	N	6

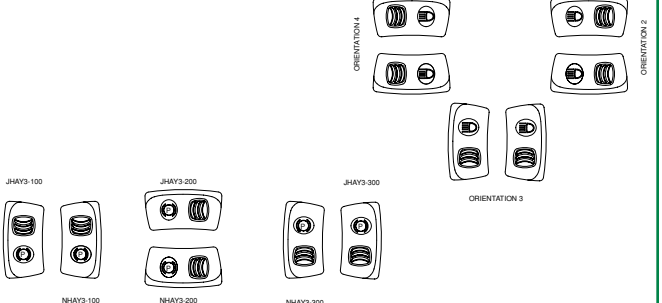
12 ACTUATOR LENS OR BODY LEGEND²

00 - No Legend				
21 OFF	22 ON	23 O	24 I	
25 O	26 O	27 O	28 I	
F	N			

For additional legend options & codes, see page 69 of this catalog

13 LEGEND ORIENTATION

- 0 No legend
- 1 Orientation 1
- 2 Orientation 2
- 3 Orientation 3
- 4 Orientation 4



NOTES

Shading indicates standard configurations.

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

- Custom colors are available. Consult factory.
- White imprinting is standard on black actuators; Black imprinting is standard on white, red and gray actuators; Custom colors are available, consult factory.
- Only available with 3 position circuits. Center OFF and special circuits only available with center position lock function.
- Additional ratings available. See page 57.
- Located at T3-6 end of switch.

V	1	D	A	B	T	O	B	-	G	R	C	00	-	0	00
1 Series	2 Circuit	3 Rating	4 Termination	5 Illumination	6 Lamp	7 Lamp	8 Bracket		9 Actuator	10 Lens	11 Color	12 Legend		13 Legend Orientation	14 Actuator Lens Legend

1 SERIES

V

2 CIRCUIT

Terminal Connections as viewed from bottom of switch:
 8 terminal 10 terminal
 8 - 7 8 - 7
 1 - 4 1 - 4
 2 - 5 2 - 5
 3 - 6 3 - 6
 10 - 9

() - momentary

SP - single pole - uses terminals 1, 2 & 3.
 DP - double pole uses terminals 1, 2, 3, 4, 5 & 6.
 Terminals 7, 8, 9 & 10 for lamp circuit only.

Position:

SP	DP	2 & 3, 5 & 6	Connected Terminals	1 & 2, 4 & 5
1 A	ON	NONE	NONE	OFF
2 B	(ON)	NONE	NONE	OFF
3 C	ON	NONE	NONE	(OFF)
4 D	ON	NONE	NONE	ON
5 E	ON	NONE	NONE	(ON)
6 J	ON	OFF	OFF	ON
7 K	ON	OFF	OFF	(ON)
8 L	(ON)	OFF	OFF	(ON)

SPECIAL CIRCUITS

	2 & 3	2 & 3, 5 & 4	5 & 4
H*	2 & 3	2 & 3	OFF
G*	2 & 3, 5 & 6	2 & 3	1 & 2
S	2 & 3, 5 & 6	2 & 3	OFF
M*	(2 & 3, 5 & 6)	2 & 3	1 & 2
R*	(2 & 3, 5 & 6)	2 & 3	5 & 4
E*	5 & 6	5 & 3	5 & 4

* Jumper between terminals 2 & 5 for circuits H, G, & M are specified in selection 4.

External jumper between terminals 2 & 4 for circuit E are provided by customer. Circuit E may be used for SP OFF-ON-ON circuit. Circuits H, M & E not available with ratings 8 - 9.

3 RATING^{1,6}

1	.4VA @ 28VDC Resistive
4	10A 250VAC 1/2 HP, 15A 125VAC 1/2 HP, No Listings
5	10A 250VAC 1/2 HP, 15A 125VAC 1/2 HP, UL Recognized, CSA Certified
8*	10A 250VAC, 15A 125VAC, 1/2 HP 125-250VAC, 12(2)A 250 VAC μ T85
9*	10A 250VAC, 15A 125VAC, 1/2 HP 125-250 VAC, 12(6)A 250 VAC T85
B	15A 24V
C	20A 18V
D	20A 12V

* Ratings 8 & 9 are UL, CSA, VDE, DEMKO, SEMKO, NEMKO, FIMKO & BEAB certified, require terminations A or B for double pole circuits, & are not available with illumination circuits 4, 8, D, J, N, & T or with wire lead or solder lug terminations. Circuits 1, 4, A & D are not available with rating 8. Ratings 8 & 9 must specify lamp code 2 (250VAC neon).

4 TERMINATION/BASE STYLE

8 term	10 term	Termination	Jumper
1	2	.250 TAB (QC) no barriers	No
A	B	.250 TAB (QC) with barriers	No
J	K	.250 TAB (QC) no barriers	Yes T2 to 5
3	4	Solder Lug no barriers	No
C	D	Solder Lug	No
5	6	Wire Leads no barriers	No
E	F	Wire Leads	No

Note: Codes J & K for circuits H, G & M. Ratings 8 & 9 require terminations A or B only.

5 ILLUMINATION & SWITCH SEALING

Lamp #1: above terminals 1 & 4 end of switch.; Lamp #2 above terminals 3 & 6 end of switch.

Positive (+) and negative (-) symbols apply to LED lamps only

Sealed	Unsealed	Lamps	Actuator Lens position when Illuminated	Lamp wired to Terminals
S	0	None		
A	1	# 1	Independent	8+ 7-
B	2	# 1	Down	3+ 7-
C	3	# 2	Up	3+ 7-
D	4	# 1	Down	3+ 7-
E	5	# 1	Up	1+ 7-
F	6	# 2	Up	3+ 7-
G	7	# 1	Independent	8+ 7-
H	8	# 2	Up	3+ 6-
U	Z	# 2	Up	8+ 7-
	Y	# 1	Independent	8+ 7-
		# 2	Independent	10+ 9-
Selections for Single Pole Switches Only:				
J	8	# 1	Down	3+ 8-
K	W	# 2	Independent	6+ 7-
		# 1	Independent	8+ 7-
		# 2	Independent	6+ 7-
Selections for Double Pole Switches Only:				
L	9	# 1	Down	3+ 6-
M	R	# 2	Up	3+ 6-
N	T	# 1	Down	3+ 6-
		# 2	Down	1+ 4-
P	V	# 1	Up	1+ 4-
		# 2	Up	3+ 6-
U	Y	# 1	Independent	8+ 7-
		# 2	Independent	10+ 9-

6,7 LAMP (same coding for both selections)

Selection 6: above terminals 1 & 4; Selection 7: above terminals 3 & 6

No lamp	0
Neon	1 125VAC 2 250VAC
Incandescent	4 3V 5 6V 6 12V 7 18V 8 24V
LED*	
2VDC	Red A Amber L Green F Red R
6VDC	B M G S
12VDC	C N H T
24VDC	D P J V

* Consult factory for "daylight bright" LED options. Typical current draw for LED is 20ma.

8 FLUSH BRACKET COLOR*, PANEL SEAL

No Seal	Black B White W Gray G
One Seal	C Y H

9 ACTUATOR

No Actuator	0
Contura V	G
Contura V Laser Etch	P

10 LENS

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					Lens style & location: #1 / #2
Clear	White	Amber	Green	Red	Blue		
1	6	B	G	M	T	bar	
2	7	C	H	N	U	bar/bar	
3	8	D	J	P	V	oval	
4	9	E	K	R	W	oval/bar	
5	A	F	L	S	Y	oval/oval	

11 ACTUATOR COLOR^{1,3,5}

No Actuator	0	Black C	Gray H	Red S
White	Y	Nickel D	Pewter E	

12 ACTUATOR LENS OR BODY LEGEND^{2,7}

00 - No Legend this location/No actuator

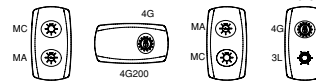
11 ON	12 OFF	13 I	14 O
OFF	ON	O	I
15 O O	16 O O	17 O I	18 I O
F N	N F	F	

For additional legend options & codes, see page 69 of this catalog.

13 LEGEND ORIENTATION³

0 No legend (used with codes 11-18 in selection 12)

1	Orientation 1
2	Orientation 2
3	Orientation 3
4	Orientation 4



14 ACTUATOR LENS LEGEND

00 No legend this location / no actuator

(used with codes 11-18 in selection 12) Selection 14 required when switch requires two legends. If the two legends consist of one lens and one body legend, lens legend must be specified in selection 12; body legend specified in selection 14.

For legend options & codes, see page 69 of this catalog

NOTES

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

- Custom colors are available. Consult factory.
- White imprinting is standard on black actuators; Black imprinting is standard on white, red and gray actuators; Custom colors are available, consult factory.
- Laser Etched rocker only available with lens code Z & actuator colors black, nickel or pewter.
- Additional ratings available. See page 57.
- Nickel and Pewter colors only available with laser etched actuator.
- Rating 9 only available with circuits 1, 4, A & D.
- Consult factory for laser etched lens callout.

V	1	D	A	B	6	0	1	-	6	P	Z	00	-	0	00
1 Series	2 Circuit	3 Rating	4 Termination	5 Illumination	6 Lamp	7 Lamp	8 Bracket		9 Actuator	10 Lens	11 Lens	12 Legend		13 Legend Orientation	14 Actuator Lens Legend

1 SERIES

V

2 CIRCUIT

Terminal Connections as viewed from bottom of switch:

8 terminal	10 terminal
8 - 7	8 - 7
1 - 4	1 - 4
2 - 5	2 - 5
3 - 6	3 - 6
10 - 9	

() - momentary

SP - single pole - uses terminals 1, 2 & 3.
DP - double pole uses terminals 1, 2, 3, 4, 5 & 6.
Terminals 7, 8, 9 & 10 for lamp circuit only.

Position:

SP	DP	2 & 3, 5 & 6	Connected Terminals	1 & 2, 4 & 5
1 A	ON	NONE	NONE	OFF
2 B	(ON)	NONE	NONE	OFF
3 C	ON	NONE	NONE	(OFF)
4 D	ON	NONE	NONE	ON
5 F	ON	NONE	NONE	(ON)
6 J	ON	OFF	OFF	ON
7 K	ON	OFF	OFF	(ON)
8 L	(ON)	OFF	OFF	(ON)

SPECIAL CIRCUITS

	2 & 3	2 & 3, 5 & 4	5 & 4
H*	2 & 3	2 & 3	OFF
G*	2 & 3, 5 & 6	2 & 3	1 & 2
S	2 & 3, 5 & 6	2 & 3	OFF
M*	(2 & 3, 5 & 6)	2 & 3	1 & 2
R	(2 & 3, 5 & 6)	2 & 3	5 & 4
E*	5 & 6	5 & 3	5 & 4

* Jumper between terminals 2 & 5 for circuits H, G, & M are specified in selection 4.
External jumper between terminals 2 & 4 for circuit E are provided by customer. Circuit E may be used for SP OFF-ON-ON circuit. Circuits H, M & E not available with ratings 5 - 9.

3 RATING*

1	.4VA @ 28VDC Resistive
4	10A 250VAC 1/2 HP, 15A 125VAC 1/2 HP, No Listings
5	10A 250VAC 1/2 HP, 15A 125VAC 1/2 HP, UL Recognized, CSA Certified
8*	10A 250VAC, 15A 125VAC, 1/2 HP 125-250VAC, 12(2)A 250 VAC μ T85
9*	10A 250VAC, 15A 125VAC, 1/2 HP 125-250 VAC, 12(6)A 250 VAC T85
B	15A 24V
C	20A 18V
D	20A 12V

* Ratings 8 & 9 are UL, CSA, VDE, DEMKO, SEMKO, NEMKO, FIMKO & BEAB certified, require terminations A or B for double pole circuits, & are not available with illumination circuits 4, 8, D, J, N, & T or with wire lead or solder lug terminations. Circuits 1, 4, A & D are not available with rating 8. Rating 9 only available with circuits 1, 4, A & D. Ratings 8 & 9 must specify lamp code 2 (250VAC neon).

4 TERMINATION/BASE STYLE

8 term	10 term	Termination	Jumper
1	2	.250 TAB (QC) no barriers	No
A	B	.250 TAB (QC) with barriers	No
J	K	.250 TAB (QC) no barriers	Yes T2 to 5
3	4	Solder Lug no barriers	No
C	D	Solder Lug	No
5	F	Wire Leads no barriers	No
E		Wire Leads	No

Note: Codes J & K for circuits H, G & M. Ratings 8 & 9 require terminations A or B only.

5 ILLUMINATION & SWITCH SEALING

Lamp #1: above terminals 1 & 4 end of switch.; Lamp #2 above terminals 3 & 6 end of switch.

Positive (+) and negative (-) symbols apply to LED lamps only

Sealed	Unsealed	Lamps	Actuator Lens position when Illuminated	Lamp wired to Terminals
--------	----------	-------	---	-------------------------

S	0	None		
A	1	# 1	Independent	8+ 7-
B	2	# 1	Down	3+ 7-
C	3	# 2	Up	3+ 7-
D	4	# 1	Down	3+ 7-
E	5	& # 2	Down	1+ 7-
		# 1	Up	1+ 7-
F	6	& # 2	Up	3+ 7-
		# 1	Independent	8+ 7-
G	7	& # 2	Up	3+ 6-
		# 1	Independent	8+ 7-
H	Z	& # 2	Up	3+ 7-
U	Y	# 1	Independent	8+ 7-
		& # 2	Independent	10+ 9-

Selections for Single Pole Switches Only:

J	8	# 1	Down	3+ 8-
		& # 2	Independent	6+ 7-
K	W	# 1	Independent	8+ 7-
		& # 2	Independent	6+ 7-

Selections for Double Pole Switches Only:

L	9	# 1	Down	3+ 6-
M	R	# 2	Up	3+ 6-
N	T	# 1	Down	3+ 6-
		& # 2	Down	1+ 4-
P	V	# 1	Up	1+ 4-
		& # 2	Up	3+ 6-
U	Y	# 1	Independent	8+ 7-
		& # 2	Independent	10+ 9-

6,7 LAMP (same coding for both selections)

Selection 6: above terminals 1 & 4; Selection 7: above terminals 3 & 6

No lamp	0
Neon	1 125VAC 2 250VAC
Incandescent	4 3V 5 6V 6 12V 7 18V 8 24V
LED*	
2VDC	Red A Amber L superbright Green F Red R
6VDC	B M G S
12VDC	C N H T
24VDC	D P J V

* Consult factory for "daylight bright" LED options. Typical current draw for LED is 20ma.

8 BRACKET COLOR*, PANEL SEAL (external foam gasket)

# of gaskets	0	1	2	0	1
Black	B	C	D	1	4
White	W	Y	Z	2	5
Gray	G	H	J	3	6

9 ACTUATOR

No Actuator	0	Black	Gray	White	Red
Contura X	1	2	3	4	
Contura XI	6	7	8	9	
Contura XII	J	K	N	M	

Actuator orientation above terminals: 3, 6 1, 4

10 LENS - above lamp #1 terminals 1,4

11 LENS - above lamp #2 terminals 3,6

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	
3	8	D	J	P	V	Bar	
4	9	E	K	R	W	One piece Square	
5	A	F	L	S	Y	Two piece Square*	
						(w/ clear top protective lens)	
2	7	C	H	N	U	Two piece Square*	
						(w/ smoke top protective lens)	
1	6	B	G	M	T	Two piece Square*	
						(w/ white top protective lens)	

* All bottom lenses are molded of opaque material. Consult factory for other lens colors.

12 ACTUATOR LENS OR BODY LEGEND*

00 - No Legend this location/No actuator

11 ON	12 OFF	13 I	14 O
OFF	ON	O	I
15 O	16 O	17 O	18 I
F N	N F		
21 OFF	22 ON	23 O	24 I
25 O	26 O	27 O	28 I
F N	N F		

For additional legend options & codes, see page 69 of this catalog

13 LEGEND ORIENTATION*

0 No legend (used with codes 11-18 in selection 12)

1 Orientation 1	2 Orientation 2	3 Orientation 3	4 Orientation 4
-----------------	-----------------	-----------------	-----------------

14 ACTUATOR LENS LEGEND

00 No legend this location/no actuator (used with codes 11-18 in selection 12)

Selection 14 required when switch requires two legends. If the two legends consist of one lens & one body legend, lens legend must be specified in selection 12; body legend specified in selection 14. For legend options & codes, see page 69 of this catalog.

NOTES

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

- Custom colors are available. Consult factory.
- White imprinting is standard on black actuators; Black imprinting is standard on white, red & gray actuators. Custom colors are available, consult factory.
- With 2 square lenses, use sel. 12 for lens above lamp 1, & selection 14 for lens above lamp 2.
- Additional ratings available. See page 57.
- Not available with Contura XI rockers.

V 1 D A S W O 1 - 1 P B 00 - 0

1 Series 2 Circuit 3 Rating 4 Termination 5 Illumination 6 Lock 7 Lamp 8 Bracket 9 Actuator 10 Lens 11 Function 12 Legend 13 Legend Orientation

1 SERIES

V

2 CIRCUIT

Terminal Connections as viewed from bottom of switch:

8 terminal 10 terminal

8 - 7 8 - 7

1 - 4 1 - 4

2 - 5 2 - 5

3 - 6 3 - 6

10 - 9

Position:

SP DP

1 2 & 3, 5 & 6

4 D ON

6 J ON

7 K ON

8 L (ON)

9 N OFF

SPECIAL CIRCUITS

H* 2 & 3

G* 2 & 3, 5 & 6

S 2 & 3, 5 & 6

M* (2 & 3, 5 & 6)

R (2 & 3, 5 & 6)

E* 5 & 6

* Jumper between terminals 2 & 5 for circuits H, G, & M are specified in selection 4.

External jumper between terminals 2 & 4 for circuit E are provided by customer. Circuit E may be used for SP OFF-ON-ON circuit. Circuits H, M & E not available with ratings 5, 8 & 9.

2 Connected Terminals

NONE

NONE

OFF

OFF

OFF

OFF

NONE

1 & 2, 4 & 5

OFF

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

ON

3 RATING⁵

1 .4VA @ 28VDC Resistive

4 10A 250VAC 1/2 HP, 15A 125VAC 1/2 HP, No Listings

5 10A 250VAC 1/2 HP, 15A 125VAC 1/2 HP, UL Recognized, CSA Certified

8* 10A 250VAC, 15A 125VAC, 1/2 HP 125-250VAC, 12(2)A 250 VAC μ T85

9* 10A 250VAC, 15A 125VAC, 1/2 HP 125-250 VAC, 12(6)A 250 VAC T85

B 15A 24V

C 20A 18V

D 20A 12V

* Ratings 8 & 9 are UL, CSA, VDE, DEMKO, SEMKO, NEMKO, FIMKO & BEAB certified, require terminations A or B for double pole circuits, & are not available with illumination circuits 4, 8, D, J, N, & T or with wire lead or solder lug terminations. Circuits 1, 4, A & D are not available with rating 8. Rating 9 only available with circuits 1, 4, A & D. Ratings 8 & 9 must specify lamp code 2 (250VAC neon).

4 TERMINATION/BASE STYLE

8 term 10 term Termination Jumper

1 2 .250 TAB (QC) no barriers No

A B .250 TAB (QC) with barriers No

J K .250 TAB (QC) no barriers Yes T2 to 5

3 4 Solder Lug no barriers No

C D Solder Lug No

5 6 Wire Leads no barriers No

E F Wire Leads No

Note: Codes J & K for circuits H, G & M. Ratings 8 & 9 require terminations A or B only.

5 ILLUMINATION & SWITCH SEALING

Lamp above terminals 3 & 6 end of switch.

Positive (+) and negative (-) symbols apply to LED lamps only

Sealed Unsealed Lamps

0 3 #2

1 3 #2

2 3 #2

3 3 #2

4 3 #2

5 3 #2

6 3 #2

7 3 #2

8 3 #2

9 3 #2

10 3 #2

11 3 #2

12 3 #2

13 3 #2

14 3 #2

15 3 #2

16 3 #2

17 3 #2

18 3 #2

19 3 #2

20 3 #2

21 3 #2

22 3 #2

23 3 #2

24 3 #2

25 3 #2

26 3 #2

27 3 #2

28 3 #2

29 3 #2

30 3 #2

6 LOCK

Lock above terminals 1 & 4 end of switch.

W lock

7 LAMP

Lamp above terminals 3 & 6 end of switch.

No lamp 0

Neon 1 125VAC 2 250VAC

Incandescent 4 3V 5 6V

LED*

2VDC A Red

6VDC B Amber

12VDC C Green

24VDC D Blue

superbright superbright

Green Red

F R

G S

H T

J V

* Consult factory for "daylight bright" LED options. Typical current draw for LED is 20ma.

8 RAISED BRACKET COLOR¹, PANEL SEAL (external foam gasket)

No Gasket Black White Gray

One Gasket 1 2 3

4 5 6

9 HARD SURFACE ACTUATOR¹

Contura X Black Gray Red White

1 2 3 4

Actuator orientation above terminals: 3, 6 1, 4

10 LENS - above lamp #2 terminals 3, 6

Z - No Lens

Clear White Amber Green Red Blue Lens Style

3 8 D J P V Bar

4 9 E K R W One piece Square

5 A F L S Y Two piece Square*

(w/ clear top protective lens)

2 7 C H N U Two piece Square*

(w/ smoke top protective lens)

1 6 B G M T Two piece Square*

(w/ white top protective lens)

* All bottom lenses are molded of opaque material. Consult factory for other lens colors.

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

Green or blue lenses are not recommended with Neon lamps.

11 ACTUATOR LOCK FUNCTION AND COLOR³

Lock Color Up Down Up & Down Center⁴

Match Actuator A H R 1

Black B J S 2

White C K T 3

Red D L V 4

Safety Orange E M W 5

12 ACTUATOR, LENS OR BODY LEGENDS²

00 - No Legend

21 OFF 22 ON 23 O 24 I

25 O 26 O 27 O 28 I

F F N

For additional legend options & codes, see page 69 of this catalog

13 LEGEND ORIENTATION³

0 No legend (used with codes 11-18 in selection 12)

1 Orientation 1

2 Orientation 2

3 Orientation 3

4 Orientation 4

ORIENTATION OF ACTUATOR/LENS IN PANEL

ORIENTATION 1

ORIENTATION 4

ORIENTATION

ORIENTATION 5

ORIENTATION 6

ORIENTATION 7

ORIENTATION 8

ORIENTATION 9

ORIENTATION 10

ORIENTATION 11

ORIENTATION 12

ORIENTATION 13

ORIENTATION 14

ORIENTATION 15

ORIENTATION 16

ORIENTATION 17

ORIENTATION 18

ORIENTATION 19

ORIENTATION 20

ORIENTATION 21

ORIENTATION 22

NOTES

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

1 Custom colors are available. Consult factory.

2 White imprinting is standard on black actuators; Black imprinting is standard on white, red and gray actuators; Custom colors are available, consult factory.

3 Located over T1-4 end of switch.

4 Only available with 3 position circuits. Center OFF and special circuits only available with center position lock function.

5 Additional ratings available. See page 57.

Reduce inventory levels and cost by stocking actuators and base switches separately.

Contura II, III, IV, V, X, XI, XII Base switches separately: specify **V** with code selections 2-8 in the ordering schemes.

Contura II, III, IV, V Actuator only: **VV** with code **A** or **C** for selection 9, & with selections 10-14 in the ordering schemes.

Panel Seal: VPS

Contura II, III, IV, V Actuator only: **VV** with code **A, C, E, G** or **P** for selection 9 & with selections 10-14 in the ordering schemes.

Contura X, XI, XII actuators with lenses separately: **VV** with code selections 9-14 in the ordering schemes.

Contura X & XI actuators without lenses separately:

VVP 6 1 00 1

1 Actuator Separately 2 Actuator Style/Color 3 Lens Opening 4 Actuator Legend 5 Legend Orientation

1 CONTURA X & XI ACTUATOR SEPARATELY VVP

2 ACTUATOR STYLE & COLOR

	Black	Gray	White	Red
Contura X	1	2	3	4
Contura XI	6	7	8	9

3 LENS OPENING FOR¹

1	One bar lens	4	Two Square lens
2	One bar lenses	5	Square lens on top/ bar lens on bottom (Contura X only)
3	One Square lens		

4 ACTUATOR LENS OR BODY LEGEND

00	No Legend this location
11	ON
12	OFF
13	I
14	O
15	O O
16	O O
17	O I
18	I O
F	N
F	N
F	F

For additional legend options & codes, see page 69 of this catalog

5 LEGEND ORIENTATION²

0	No legend
1	Orientation 1
2	Orientation 2
3	Orientation 3
4	Orientation 4

Contura X, XI & XII top piece of 2-piece lens separately:

VVT 1

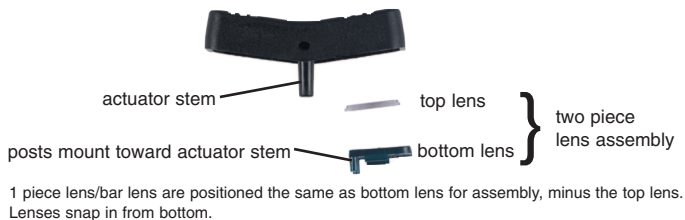
1 Lens Separately 2 Color

**1 TOP OF LENS SEPARATELY
VVT**

2 COLOR

1 Clear 2 Smoke 3 White

Contura X, XI & XII actuator lens assembly:



NOTES

- 1 If actuator lens opening for 2 bar or 2 square lenses, legend orientation 0, 1, or 2 must be chosen.
- 2 Center of actuator marking not available for Contura XII.
- 3 Legend is not available for bar style lens.
- 4 Not recommended with neon lamps.
- 5 Must also order top piece of 2 piece square lens separately.

Contura XII actuators without lenses separately:

VVP J 1 Z 21 1 00

1 Actuator 2 Style & Color 3 Lens Opening 4 Lens Opening 5 Legend 6 Legend Orientation 7 Legend

1 CONTURA XII ACTUATOR SEPARATELY VVP

2 ACTUATOR STYLE & COLOR

J	Black	K	Gray	N	White	M	Red
---	-------	---	------	---	-------	---	-----

3,4 LENS OPENING FOR

Z	No lens	1	Bar lens	2	Square lens
---	---------	---	----------	---	-------------

5, 7 LENS OR BODY LEGEND²

00	no legend	21	OFF	22	ON	23	O	24	I
25	O	26	O F	27	O N	28	I		

For additional legend options & codes, see page 69 of this catalog.

6 LEGEND ORIENTATION³

0	No legend
1	Orientation 1
2	Orientation 2

Contura X, XI & XII actuator lens assembly separately:

VVL 2 1 00 0

1 Lens Separately 2 Lens Style 3 Lens Color 4 Legend 5 Legend Orientation

1 CONTURA X, XI & XII LENS SEPARATELY VVL

2 LENS STYLE³

1	Bar lens	2	One Piece Square lens	3	Bottom of Two-Piece Square lens ⁵
---	----------	---	-----------------------	---	--

3 TRANSLUCENT LENS COLOR

1	Clear	2	White	3	Amber	4	Green ⁴	5	Red	6	Blue ⁴
---	-------	---	-------	---	-------	---	--------------------	---	-----	---	-------------------

4 LENS OR BODY LEGEND²

00	No legend				
21	OFF	22	ON	23	O
				24	I
25	O F F	26	O N	27	O
				28	I

For additional legend options & codes, see page 69 of this catalog.

5 LEGEND ORIENTATION³

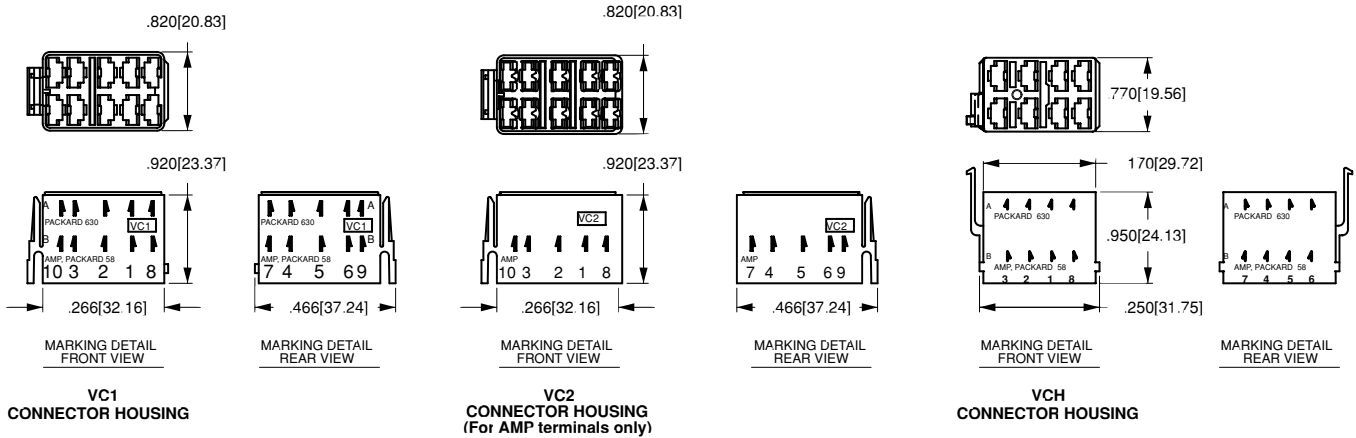
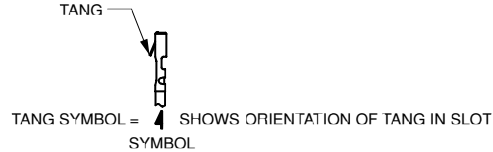
0	No legend
1	Orientation 1
2	Orientation 2
3	Orientation 3
4	Orientation 4

Easily integrate Contura products into your system, with Contura Accessories

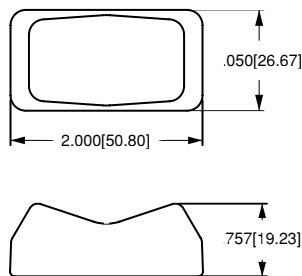
Contura Connectors

Q.C. SELECTION GUIDE					
COMPANY SERIES	PART NO		WIRE RANGE		ORIENTA- TION
	PLAIN BRASS	TIN PLATED BRASS	AWG	MM (REF)	
PACKARD 58 SERIES	02965580		12	3.0	B
	02965471	12010601	(2)16-14	(2)1.0-2.0	
	02965470		16-14	1.0-2.0	
	02965469	06288318	20-18	.5-.8	
PACKARD METRI-PACK 630 SERIES		12084590	12	3.0	A
		12052224	12	3.0	
		12015870	16-14	1.0-2.0	
		12020035	(2)22-18	(2).5-.8	
	12015832	12015869	20-18	.5-.8	
		12052222	20-22	.35-.5	
AMP 250 SERIES FASTIN-FASTON	60253-1	60253-2	16-12	1.3-3	B
			(2) 16	(2) 1.3	
	42100-1	42100-2	18-14	.8-2	
	60295-1	60295-2	22-18	.3-.9	

NOTE: Consult Delphi Packard and/or Amp or actual part numbers and availability.
AMP is a registered trademark of AMP Inc. Harrisburg, PA
Delphi Packard is a registered trademark of Delphi-Packard Electrica Systems Warren, Ohio



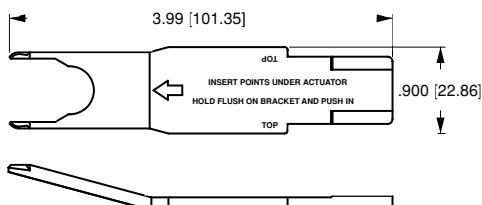
Contura X Boot



**VB1-01
CONTURA X BOOT**



Contura II, III, IV & V Actuator Removal Tool

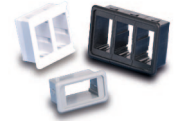
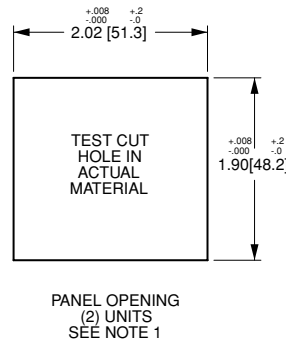
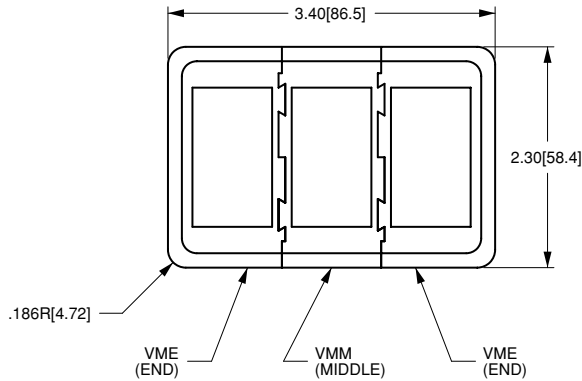


**VRT
ACTUATOR REMOVAL
TOOL
(For flush bracket)**



Contura Mounting Panels

Dimensional Specifications: in. [mm]



PANEL THICKNESS:
TOLERANCE:

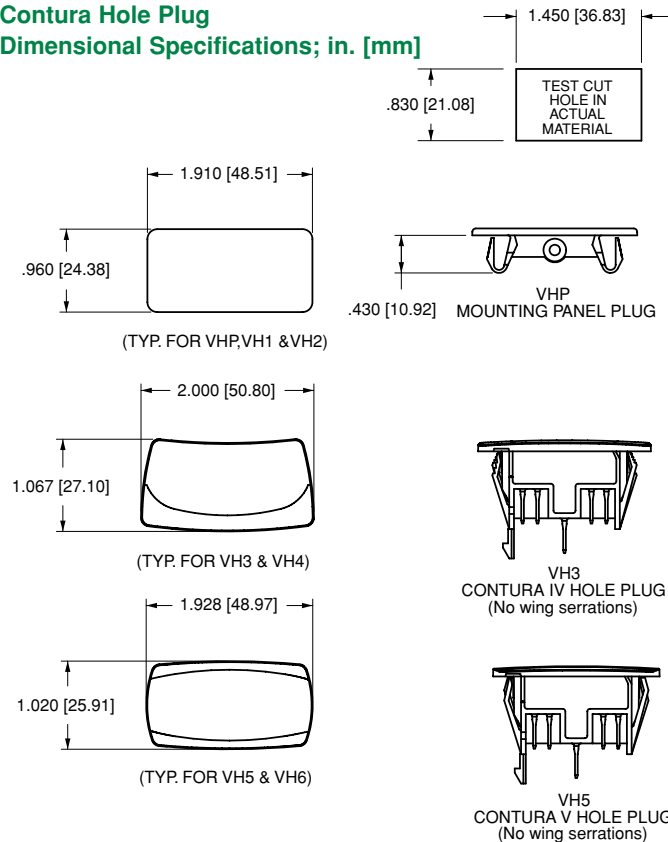
.062 [1.57]
.093 [2.36]
.125 [3.17]
.187 [4.75]
.250 [6.35]
.375 [9.52]

NOTES:

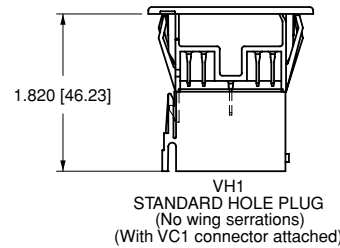
1. FOR ADDITIONAL UNITS, ADD 1.03 [26.2] PER UNIT.
2. FOR MORE THAN 2 V-SERIES SWITCHES, ADD MIDDLE SECTION.

Contura Hole Plug

Dimensional Specifications; in. [mm]



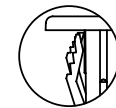
VHP
MOUNTING PANEL PLUG



VH2
STANDARD HOLE PLUG
(With wing serrations)



DETAIL VIEW
VH1, VH3 & VH5
HOLE PLUGS
(No wing serrations
for ease of removal)



DETAIL VIEW
VH2, VH4 & VH6
HOLE PLUGS
(With wing serrations)

Additional V-Series Ratings

- 1 .4VA @ 28VDC Resistive
- 4 10A 250VAC 1/2 HP, 15A 125 VAC 1/2 H, No Agency Listings
- 5 10A 250VAC 1/2 HP, 15A 125 VAC 1/2 HP, UL Recognized, CSA Certified
- 6* 15A 125VAC 1/2 HP, 12(2)A 125 VAC μ T85
- 7* 15A 125VAC 1/2 HP, 12(6)A 125 VAC T85
- 8* 10A 250VAC, 15A 125VAC, 1/2 HP 125-250VAC, 12(2)A 250 VAC μ T85
- 9* 10A 250VAC, 15A 125VAC, 1/2 HP 125-250VAC, 12(6)A 250 VAC T85
- B 15A 24V
- C 20A 18V
- D 20A 12V
- E 20A 14V, 10A 14VT (circuits 1, 4, A, & D only)
- F 10A 14V, 6A, 14VT (circuit G only)
- G 20A 6V
- H 20A 3V

- L 15A 125 VAC, 10A 250VAC, 1/2 HP 125-250 VAC; 6A 125 VAC L
- M .4VA/20A 12V (combi-contact)
(combination gold/silver contacts for borderline dry circuit applications)
- N .4VA/15A 24V (combi-contact)
(combination gold/silver contacts for borderline dry circuit applications)

NOTES

Consult factory to determine availability for individual circuits.

* Ratings 6 - 9 are UL, CSA, VDE, DEMKO, SEMKO, NEMKO, FIMKO & BEAB certified, require terminations A or B for double pole circuits, & are not available with illumination circuits 4, 8, D, J, N, & T or with wire lead or solder lug terminations. Circuits 1, 4, A & D are not available with rating 6 & 8. Rating 7 & 9 only available with circuits 1, 4, A & D. Circuits 2, 3, 5, 7, 8, K, L are 1/2 HP 250VAC only with rating 8. Ratings 6 & 7 must specify lamp code 1 (125VAC neon). Ratings 8 & 9 must specify lamp code 2 (250VAC neon). Rating L available with circuits 1, 4, A & D only.

VP-Series Contura Illuminated Indicator



The Illuminated Indicator is offered with removable/replaceable lamps, Contura styling, and LED illumination. As a critical safety feature, it's illumination alerts the operator of essential system functions or malfunctions like: oil pressure, high temperature, transmission or other fluid levels, parking brake, or general system malfunction. Three different style housings (flush, raised panel, oval) assure seamless integration into most any dashboard panel.

VP	1	6	6	-	B	1	1	K	K	-	00	0	00
1 Series	2 Termination	3 Lamp	4 Lamp		5 Housing Color	6 Lens Design	7 Lens Design	8 Lens Color	9 Lens Color		10 Legend	11 Legend Orientation	12 Actuator Legend

1 SERIES

VP	Illuminated plug
H2¹	housing only
H3²	lamp module only
HP1-01	VP connector for oval and flush bezel only
VC1-01	VP connector for raised bezel only

2 TERMINATION

1	.250 TAB
----------	----------

3,4 LAMP (same coding for both selections)^{4,5,6,8,9,12}

Selection 6: above terminals 1 & 4; Selection 7: above terminals 3 & 6							
No lamp	0						
Neon	1 125VAC	2 250VAC					
Incandescent	4 3V	5 6V	6 12V	7 18V	8 24V		
LED	Amber	Green	Red				
2VDC	L	F	R				
6VDC	M	G	S				
12VDC	N	H	T				
24VDC	P	J	V				

*Typical current draw for LED is 20ma.

5 HOUSING COLOR

	flush bracket	raised bracket ¹³	oval bezel (Contura V)
Black	B	6	1
Gray	W	-	2
White	R	5	3
Red	G	-	4

6,7 SQUARE LENS DESIGN (same coding for both selections)^{4,5,6,11,12}

Z no lens	3 laser etched ¹⁰
1 transparent diamond square ¹⁰	4 transparent oval
2 translucent square ⁷	5 translucent oval

8, 9 LENS (same coding for both selections)^{3,4,5,6,9}

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

Z No Lens

	Clear	White	Amber	Green	Red	Blue	Lens Style
4	9	E	K	R	W		One piece Square/Oval¹¹
5	A	F	L	S	Y		Two piece Square*
							(w/ clear top protective lens)
2	7	C	H	N	U		Two piece Square*
							(w/ smoke top protective lens)
1	6	B	G	M	T		Two piece Square*
							(w/ white top protective lens)

* All bottom lenses are molded of opaque material. Consult factory for other lens colors.

10 LAMP #1 LENS OR BODY LEGEND⁵

00 No legend

For legend options & codes, see page 69 of this catalog

11 LEGEND ORIENTATION

0 No legend

1	Orientation 1
2	Orientation 2
3	Orientation 3
4	Orientation 4



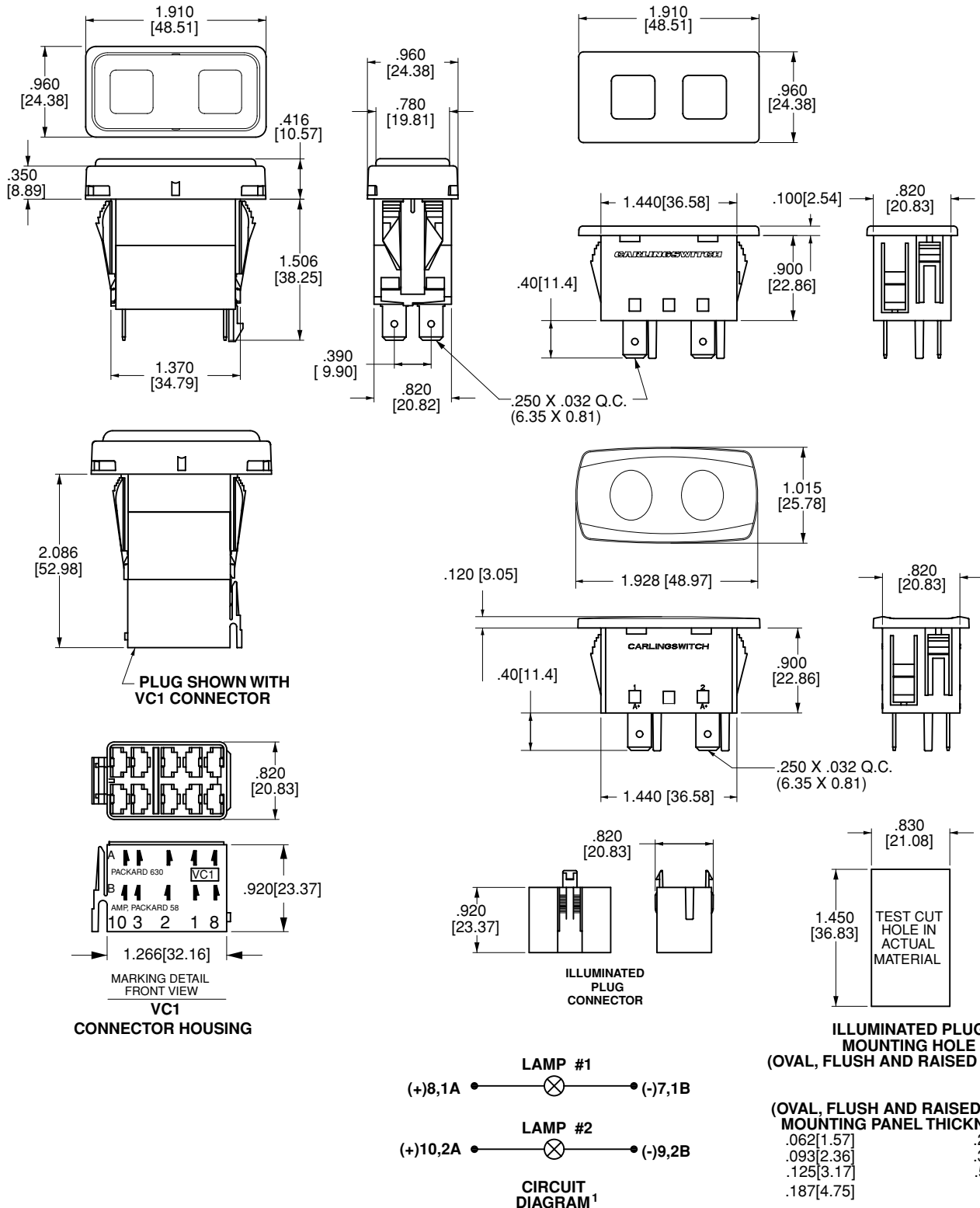
12 LAMP #2 LENS OR BODY LEGEND⁵

00 No legend

For legend options & codes, see page 69 of this catalog

NOTES

- To order housing with lenses only, specify H2 followed by fields 5-12. (flush bezel only)
- To order lamp module only, specify H3 followed by fields 2-3. (flush bezel only)
- Two piece lens not available with oval bezel.
- If only 1 lamp, specify 0 in selection 4 and Z in selections 7 & 9.
- Lamp and lens #1 located over terminals 1A and 1B for flush & oval bezel.
- Lamp and lens #2 located over terminals 2A and 2B for flush & oval bezel.
- Available with 2 piece lens option only.
- Neon lamps not recommended with blue or green lenses.
- Green or blue lenses not recommended with neon lamps.
- Available with one piece lens option only.
- Oval bezel available with oval lens only. Oval lens available with oval bezel only.
- Lamp & lens #1 located over terminals 7 & 8, & #2 located over 9 & 10 for raised bezel option.
- Both bracket and insert will be same color. For white bracket with black insert, specify 7. For black bracket with white insert, specify 8.

Dimensional Specifications: in. [mm]

NOTES

1 Oval and flush bezel styles use terminals 1A, 1B, 2A, 2B. Raised bezel style uses terminals 7,8,9,10.

L-Series Sealed Rocker Switches

Making the right connections has never been easier — with the L-Series Rocker Switch from Carling Technologies. Not only does this innovative switch offer total design flexibility, it has set 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.

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.

Integrates easily into your system

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

Withstands extreme temperatures

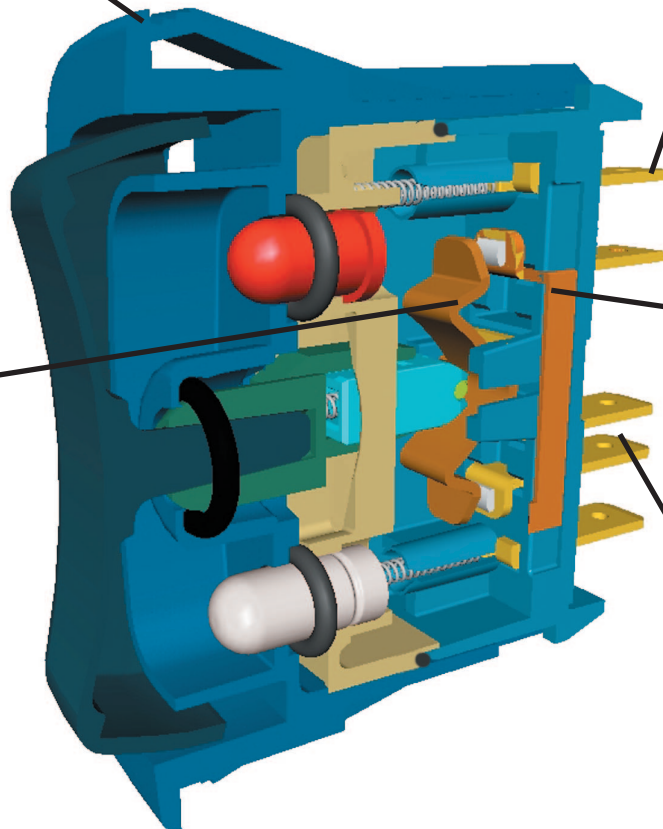
Roller pin mechanism eliminates need for lubricants, so it can withstand from -40°C to +85°C.

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.



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

Lighted	Incandescent - rated 10,000 hours LED - rated 100,000 hours 1/2 life (LED is internally ballasted for volt-ages 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, stan-dard 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.

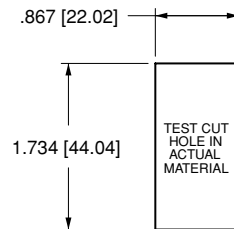
Actuator Travel (Angular Displacement)

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 resist-ance.
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 cri-teria - 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

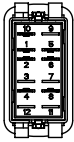
L	11	E	3	C	H	N	1	-	3	A	A	45	-	1	48
1 Series	2 Circuit	3 Rating	4 Termination	5 Illumination	6 Lamp	7 Lamp	8 Bracket		9 Actuator	10 Lens Style & Color	11 Lens Style & Color	12 Legend		13 Legend Orientation	14 Actuator Lens Legend

1 SERIES

L

2 CIRCUIT²

Terminal Orientation



() - momentary

SP - single pole - uses terminals 1, 2 & 4.
DP - double pole uses terminals 5, 6 & 8.
Terminals 9, 10, 11 & 12 for lamp circuit only.

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	(2,4&5),(1,6&8)	OFF, OFF	(1,2&8),(4,5&6)
31	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&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&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
73	(2&4),(7&8)	2&4, OFF	OFF, OFF
80	2&4,6&8	2&4, OFF	OFF,5&6
HAZARD WARNING CIRCUITS			
A2	6,7&8, 3&4	NONE	OFF,1&2
A3	6,7&8, 2&4	NONE	OFF,1&2

3 RATING²

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

4 TERMINATION^{2,3,4}

1	.250 (6.4mm) TAB (QC)	3	.187 (4.7mm) TAB (QC)
---	-----------------------	---	-----------------------

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		
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)			
1	# 2	Hazard	6+	10+	12-
2	# 1	Hazard	6+	10+	12-

6,7 LAMP (same coding for both selections)

Selection 6: above terminals 10 & 9; Selection 7: above terminals 12 & 11

No lamp	0				
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		

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

8 BRACKET COLOR¹

	Black	White	Gray	Red
Standard Bracket	1 A	2 B	3 C	4 D
Rockerguard at Lamp 1				
Rockerguard at Lamp 2	E	F	G	H

9 ACTUATOR STYLE AND COLOR¹

	Black	White	Gray	Red	Laser Etched
Rocker	A	B	C	D	3
Paddle	J	N	K	M	4

10 & 11 LENS STYLE AND COLOR

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

	Clear	White	Amber	Green	Red	Blue	
0 - No Actuator							Z - No Lens
1	-	B	G	M	T		Large Transparent
-	7	C	H	N	U		Large Translucent
3	-	D	J	P	V		Bar Transparent
-	9	E	K	R	W		Bar Transparent
5	A	-	-	-	-		Laser Etch background color

12 LASER ETCH, LENS OR BODY LEGEND

00 No legend this location / no actuator
For legend options & codes, see page 69 of this catalog.

13 LEGEND ORIENTATION

0 No legend (used with codes 11-18 in selection 12)

1 Orientation 1 - vertical, lamp 1 on top

2 Orientation 2 - horizontal, lamp 1 on right

3 Orientation 3 - vertical, lamp 1 on bottom

4 Orientation 4 - vertical, lamp 1 on left



14 ACTUATOR LENS LEGEND

00 No legend this location / no actuator
For legend options & codes, see page 69 of this catalog.

NOTES:

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

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

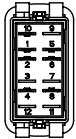
L	11	D	1	S	W	C	J	-	P	M	H	00	-	0
1 Series	2 Circuit	3 Rating	4 Termination	5 Illumination	6 Lock	7 Lamp	8 Bracket	9 Actuator	10 Lens	11 Lock	12 Legend	13 Legend Orientation		

1 SERIES

L

2 CIRCUIT⁶

Terminal Orientation



() - momentary

SP - single pole - uses terminals 1, 2 & 4.
DP - double pole uses terminals 5, 6 & 8.
Terminals 9, 10, 11 & 12 for lamp circuit only.

Position:	1	2	3 (lock location)
SP	DP	2 & 4, 6 & 8	Connected Terminals
11	21	ON	NONE
14	24	ON	NONE
16	26	ON	OFF
17	27	ON	OFF
18	28	(ON)	OFF
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&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&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
73	(2&4),(7&8)	2&4, OFF	OFF, OFF
80	2&4,6&8	2&4, OFF	OFF,5&6

3 RATING⁶

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

4 TERMINATION^{4,5}

1	.250 (6.4mm) TAB (QC)	3	.187 (4.7mm) TAB (QC)
---	-----------------------	---	-----------------------

5 ILLUMINATION⁶

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

	Lamps	Illumination Type	Lamp wired to Terminals
S	None		
B	# 2	Independent	12+ 11-

6 LOCK

W Lock above terminals 10 & 9.

7 LAMP

Above terminals 12 & 11

No lamp	0				
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		

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

8 BRACKET COLOR¹

Black J

9 ACTUATOR STYLE AND COLOR¹

Locking Rocker Black Red
P R

10 LENS STYLE AND 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
1	-	B	G	M	T
-	7	C	H	N	U
3	-	D	J	P	V
-	9	E	K	R	W
					Large Transparent
					Large Translucent
					Bar Transparent
					Bar Transparent

11 LOCK FUNCTION AND COLOR⁷

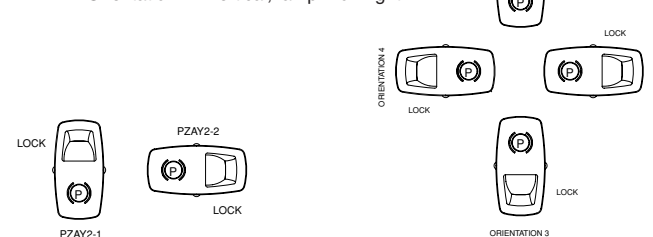
Locking Position		Up & Down	Center ³	Lock Color
Up	Down			
A	H	R	1	Match Actuator
B	J	S	2	black
C	K	T	3	white
D	L	V	4	red
E	M	W	5	safety orange

12 LASER ETCH, LENS OR BODY LEGEND

00 No legend this location / no actuator
For legend options & codes, see page 69 of this catalog.

13 LEGEND ORIENTATION³

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



NOTES:

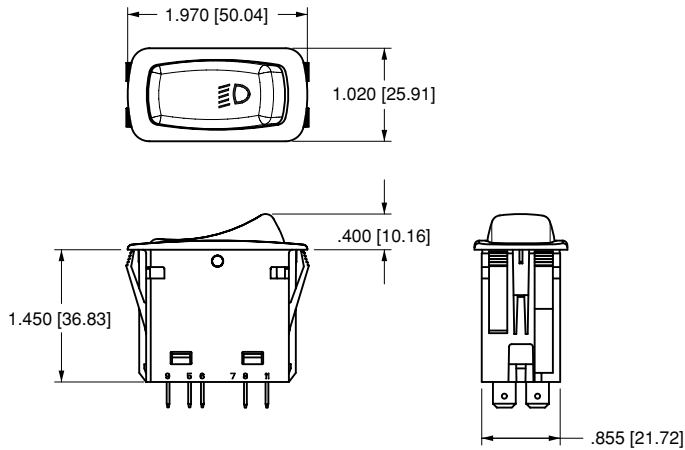
Consult factory to verify horsepower rating for your particular circuit choice.

- Custom colors are available. Consult factory.
- Additional lamp circuits available. Consult factory.
- Available only with 3 position circuits.
- Termination 1 not available with rating 4.
- Termination 3 only available with ratings 1, B and E.
- Circuits 30, 31, 58 and 69, when used in combination with termination codes 1 is not available with rating codes 4, C, D, G or H.
- Up, Up & Down, and Center lock options will be available 1Q2004.

Dimensional Specifications

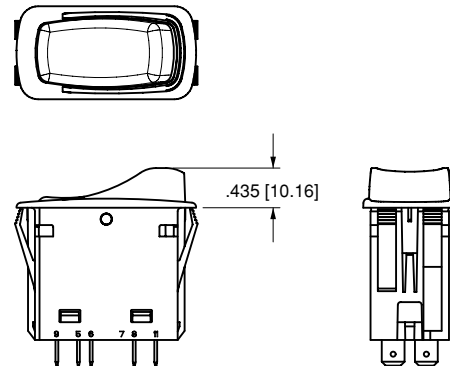
L SERIES

SHOWN WITH LASER ETCHED
ACTUATOR



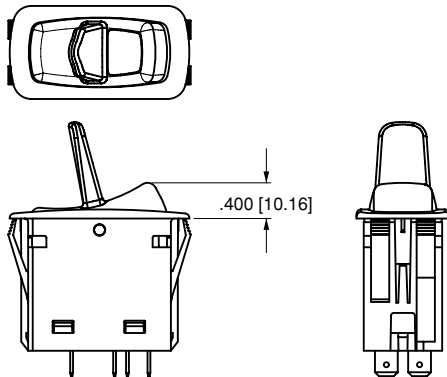
L SERIES

SHOWN WITH ROCKER GUARD



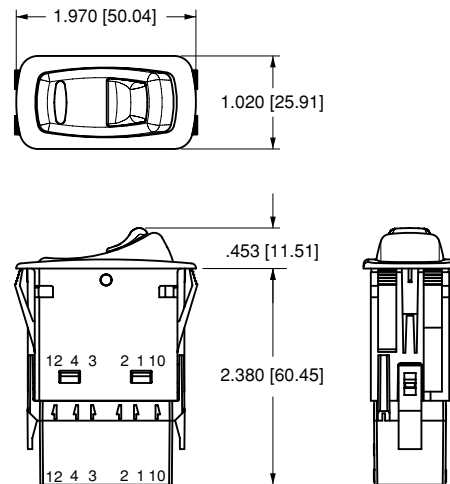
L SERIES

SHOWN WITH LARGE LENS
AND PADDLE ACTUATOR



L SERIES

SHOWN WITH BAR LENS, LOCK
AND CONNECTOR

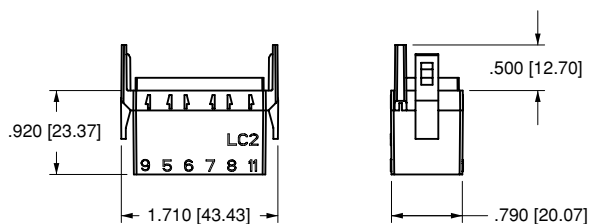


Connector

L SERIES CONNECTOR

LC1-01 BLACK .250 TAB CONNECTOR

LC1-02 BLACK .187 TAB CONNECTOR

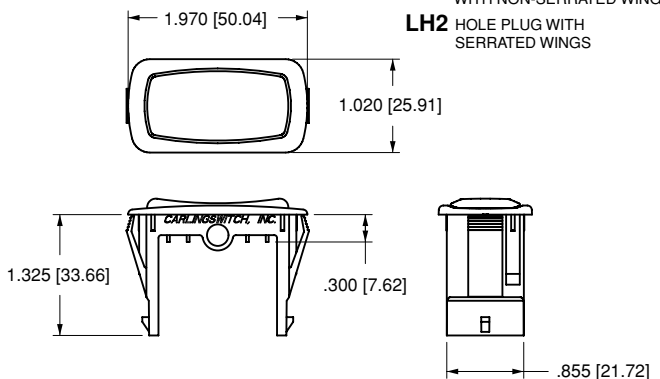


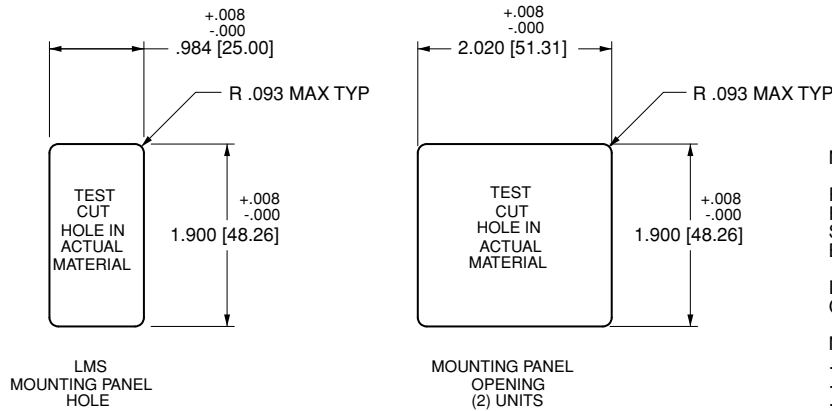
Hole Plug

L SERIES HOLE PLUG

LH1 REMOVABLE HOLE PLUG
WITH NON-SERRATED WINGS

LH2 HOLE PLUG WITH
SERRATED WINGS



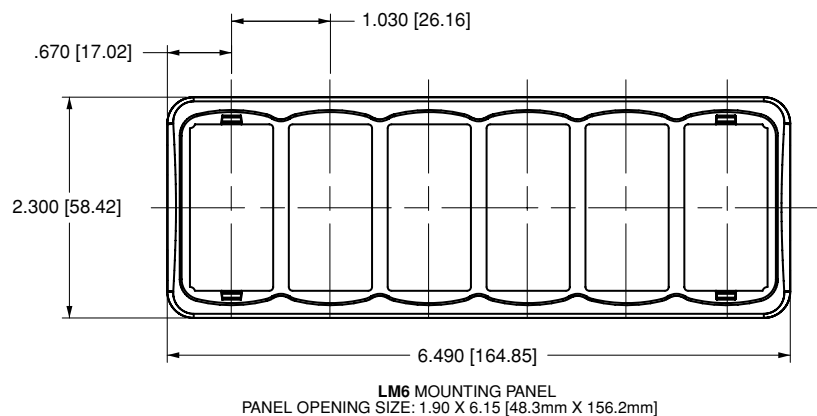
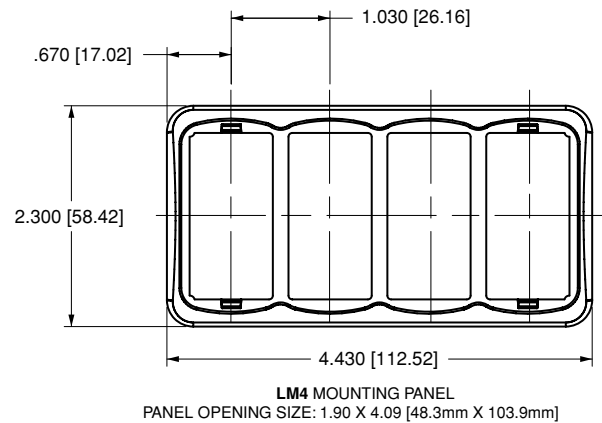
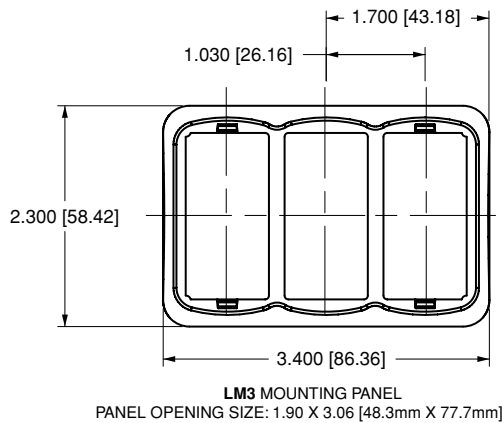
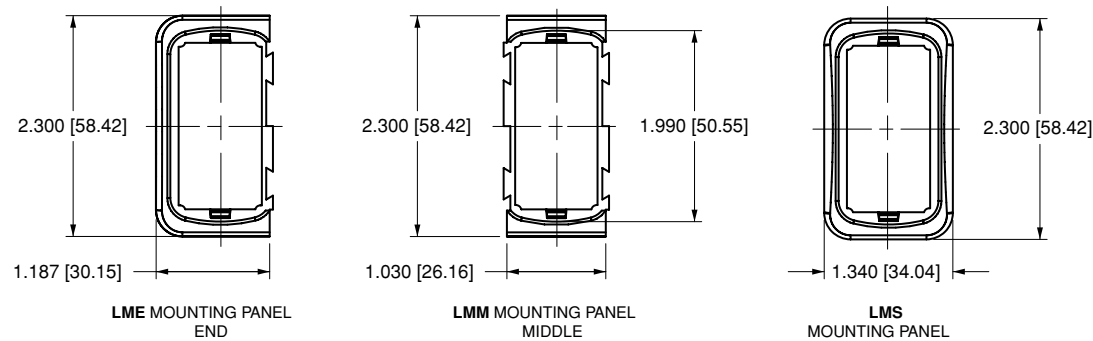
Mounting Panel
Dimensional Specifications: in. [mm]

MOUNTING PANEL

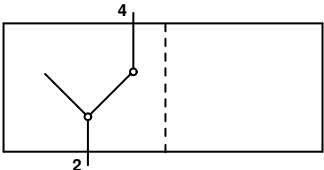
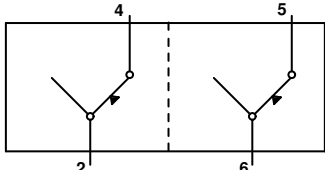
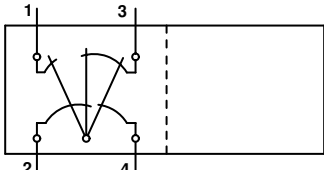
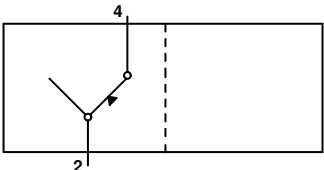
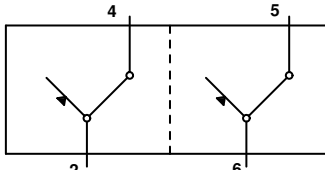
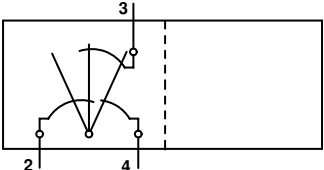
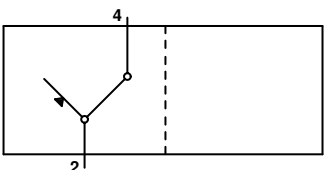
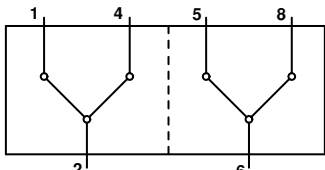
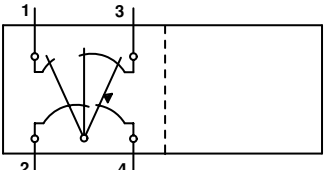
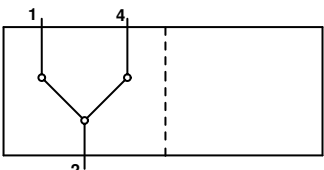
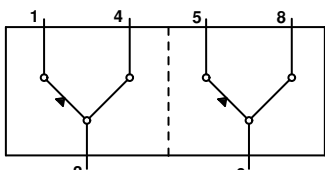
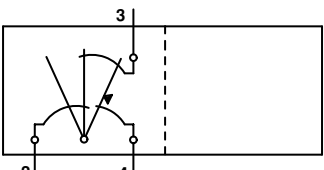
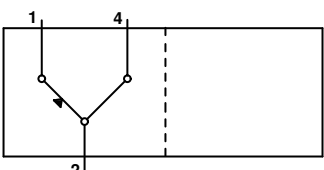
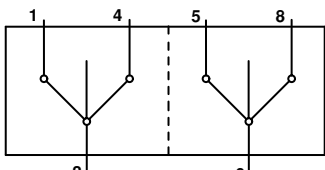
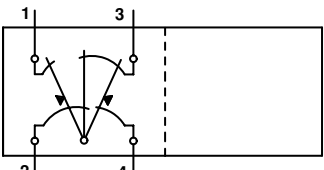
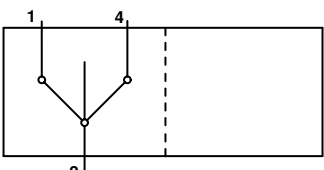
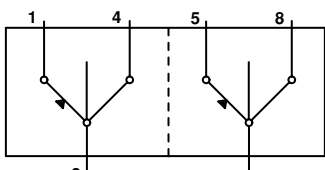
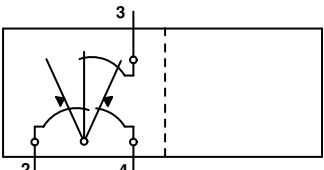
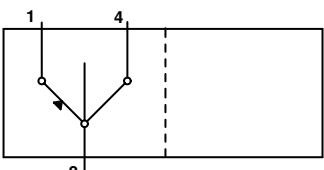
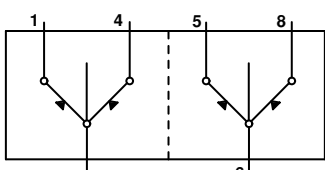
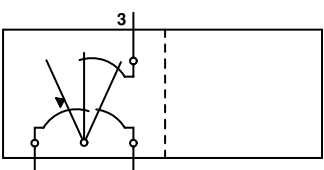
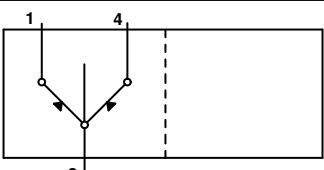
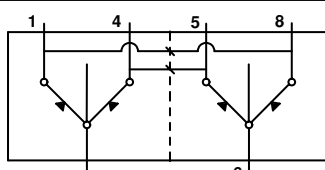
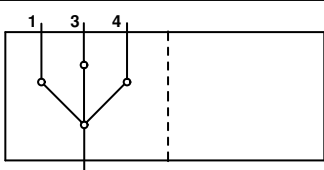
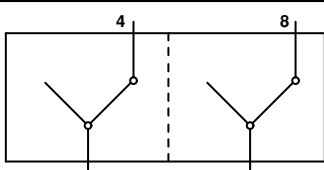
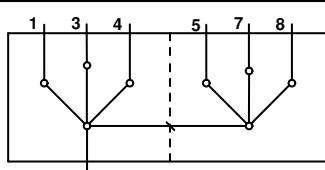
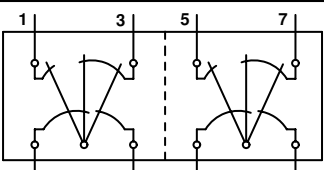
FOR ADDITIONAL UNITS, ADD 1.03 [26.2] PER UNIT.
FOR MORE THAN 2 L-SERIES SWITCHES, ADD MIDDLE
SECTION. AVAILABLE IN PANEL THICKNESSES LISTED
BELOW. CONSULT FACTORY

DIMENSIONS: LME 2.02 [51.3mm] PLUS NUMBER OF
CENTER BEZELS (LMM) X 1.034 [26.26mm]


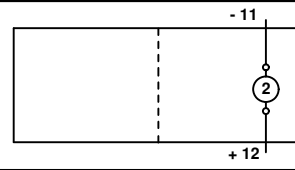
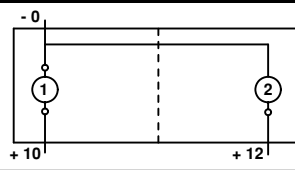
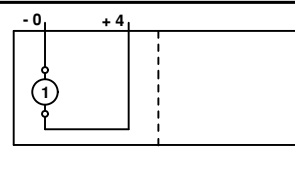
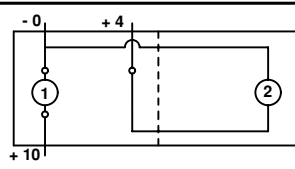
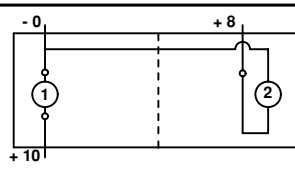
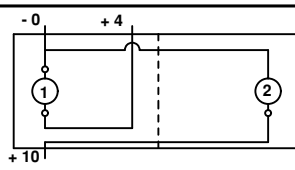
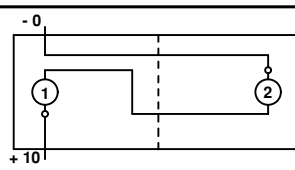
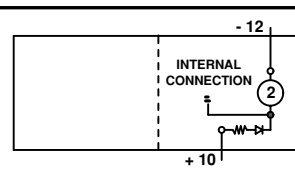
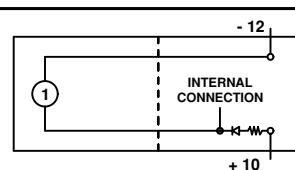
MOUNTING PANEL THICKNESS

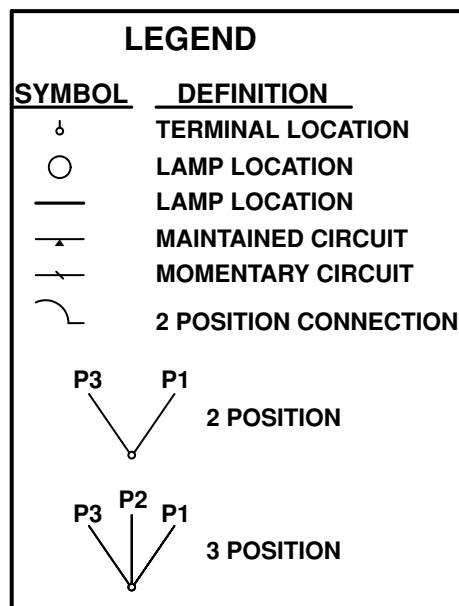
.062 [1.57]
.093 [2.36]
.125 [3.17]
.156 [3.96]





































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

CIRCUIT CODE	SCHEMATIC	CIRCUIT CODE	SCHEMATIC
62		71	
63		72	
64		73	
65		80	
66		A2	
67		A3	
68			
69			
70			

ILLUM. CODE	SCHEMATIC
A	
B	
C	
D	
E	
F	
G	
H	
1	
2	



LEGEND		LEGEND CODE		
SYMBOL	NAME (SYMBOL MEANING)	BODY	LENS	
			NEGATIVE ¹	POSITIVE
	RUNNING LIGHTS (UNDER POWER)	AA	NA	MA
	LIGHT	AB	NB	MB
	MASTER LIGHT SWITCH	AC	NC	MC
	HORN	AD	ND	MD
	PROPULSION SYSTEM TRIM TRIMMING OPERATION	AE	NE	ME
	VENTILATION FAN OR BLOWER	AF	NF	MF
	WINDSHIELD WASHER	AG	NG	MG
	WINDSHIELD WIPER	AH	NH	MH
	BILGE PUMP	AJ	NJ	MJ
	BILGE BLOWER	AK	NK	MK
	POTABLE WATER PRESSURE	AL	NL	ML
	ENGINE START	AM	ED	MM
	ENGINE STOP	AN	EE	MN
	DRIVE TILT TILT OPERATION	30		31
	EMERGENCY START	32		33
	UP/DOWN LIFT	34		
	TRIM TAB TRIMMING OPERATION	35		36

LEGEND		LEGEND CODE		
SYMBOL	NAME (SYMBOL MEANING)	BODY	LENS	
			NEGATIVE ¹	POSITIVE
	ANCHOR LIGHT	37		38
	ANCHOR	39		40
	WATER FLUSHING TAP FOR OUTBOARDS	41		42
	HIGH BEAM	43	44	45
	LOW / DIPPED BEAM	46	47	48
	SIDE MARKER LIGHT	DG	49	DF
	INTERIOR LIGHT	50	51	52
	WORK LIGHT	53	54	55
	WORK LAMP	56	57	58
	LOADING FLOOR LAMP	CW	59	CY
	ON -WIPER- INT DELAY	60		
	ROTARY BEACON	61	62	63
	LAMP TEST	DK	64	DL
	WINDSHIELD WIPER/WASHER	65	66	67
	HAZARD WARNING	68	69	70
	WARM AIR BLOWER	71	72	73
	HORN REAR	AX	74	Y4

NOTE

¹ Negative lens not available on L or LD-Series.
Additional Standard Markings available. Consult factory.

LD-Series Electronic Dimmer Control



The NEW LD-Series represents a dynamic breakthrough in dashboard technology, programmable circuitry, superior design, and unparalleled performance that will afford seamless integration into most any dash panel. A Variety of options, along with superior performance, functionality, and aesthetics assure compliance with most any customer requirement. In addition, our integrated design can provide savings by reducing the need for insulated wires and connectors.

Dielectric Strength

1000V - live to dead metal parts

Electrical Life

50,000 cycles

Mechanical Life

100,000 cycles

Operating Temperature

-40°C to +85°C

Electrical

Contact Rating	4 amps, 14 VDC 7 amps, 14 VDC 10 amps, 14 VDC 2 amps, 28 VDC 3.5 amps, 28 VDC 5 amps, 28 VDC
Contacts	Solid State
Terminals	.250 (6.3mm) Quick Connect terminations standard.
EMI/EMC	Per SAE J 1113 & SAE J 1455
Reverse Polarity	.24VDC for 5 minutes
Dielectric Strength	A potential of 1000V @ 60Hz was applied to each unit for one minute. The voltage was increased from 0 to 1000V at a rate of 500V per second and then reduced from 1000V to 0 at a rate of 500V per second. No noticeable signs of flashover, arcing or perforation were evident. All units operated properly both before and after test.

Mechanical

Endurance	100,000 cycles minimum
Actuation Force	300 grams \pm 50 grams

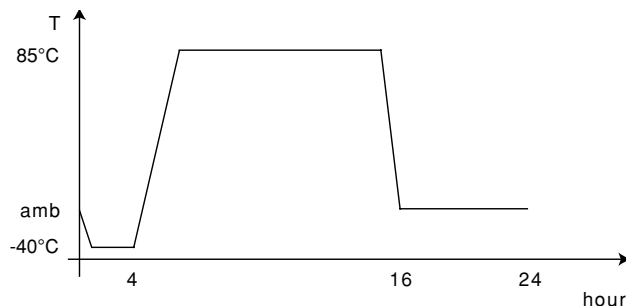
Physical Characteristics

Lighted	LED - internally dimmed, rated 100,000 hours 1/2 life
Base	PBT Polyester with V-0 flammability rating
Actuator	Polycarbonate or Nylon 6/6 glass filled
Bracket	PBT Polyester with V-0 flammability rating
Connector	Nylon 6/6 toughened
Function	Incremental or continuous dimming
Operation	Momentary
Weight	52 grams

NOTES:
For more detailed specifications, consult factory.

Environmental

Operating Temperature	-40° C to + 85° C
Vibration	Resonance Search Individual resonance searches were conducted with vibration applied along each of the three mutually perpendicular axes. 24-50 Hz 0.40 DA; 50-2000 \pm 10 G's peak Random Vibration The random vibration endurance test conditions were sequentially conducted in each of the three mutually perpendicular axes, 1hr/axis. 9.36 Grms Frequency (Hz) PSD (G ² /Hz) 24 Hz 0.06 60 Hz 0.50 100 Hz 0.50 1000 Hz 0.025 2000 Hz 0.025 During this test, all units were operated at a load current of 2A with 12.5 VDC.
Shock	Per Mil-Std 202F, Method 213B, Test Condition K @ 30G's. Tested with connector. Test criteria - No loss of circuit during test, pre, & post test contact resistance.
Salt Spray	Per Mil-Std 202F, Method 101D, Test Condition A, 96 Hrs.
Thermal Shock	Per Mil-Std 202F, Method 107F, Test Cond. A, -55°C to 85°C. Test criteria - pre & post test contact resistance
Moisture Resistance	Per Mil-Std 202F, Method 106E, Test Criteria - pre and post test contact resistance.
Dust	Per Mil-Std 810C, Method 510.2 Air velocity 300 \pm 200 ft/min, test duration 16 hr.
Temperature Cycle	Temperature CycleAccording to SAE J1455, Sec. 4.1.3.1 (See Figure below)



LD	3	5	1	C	C	1	-	3	A	A	FE	-	1	FC
1 Series	2 Rating	3 Dimming Rate	4 Termination	5 Illumination	6 Illumination	7 Bracket Color		8 Actuator Style/Color	9 Lens Color	10 Lens Color	11 Legend One		12 Legend Orientation	13 Legend Two

1 SERIES

LD Electronic Dimmer Control

2 RATING

1	4A, 14 volt	3	10A, 14 volt	C	5A, 28 volt
2	7A, 14volt	A	2A, 28 volt		

3 DIMMING RATE

1	30 - 100% 8 positions	A	0 - 100% 11 positions
5	10 - 100% 10 positions		

4 TERMINATION

1	.250 TABS (6.4 mm)
---	--------------------

5 & 6 ILLUMINATION

No lamp	S			
Red		Amber	Green	
12V LED	C	N	H	
24V LED	D	P	J	

7 BRACKET COLOR¹

1	Black	2	White	3	Gray
---	-------	---	-------	---	------

8 ACTUATOR STYLE / COLOR¹

	Laser Etched	Black	White	Gray	Red
Rocker	3	A	B	C	D
Paddle	4	J	K	M	N

9 & 10 LENS COLOR

Z NO LENS

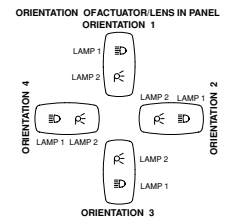
CLEAR	WHITE	AMBER	GREEN	RED	BLUE	LENS STYLE
1	-	B	G	M	T	Large
-	7	C	H	N	U	Transparent
-	-	-	-	-	-	Large
3	-	D	J	P	V	Translucent
-	9	E	K	R	W	Transparent
-	-	-	-	-	-	Bar
5	A	-	-	-	-	Translucent
						Laser Etch

11 LEGEND #1

00 No legend **FC** DIM **FE** BRIGHT
For additional legend options, see page 69 of this catalog.

12 LEGEND ORIENTATION

- 0** No legend
- 1** vertical (lamp 1 on top)
- 2** horizontal (lamp 1 on right)
- 3** vertical (lamp 1 on bottom)

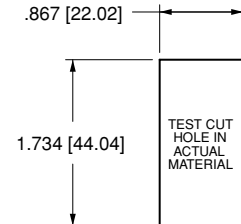
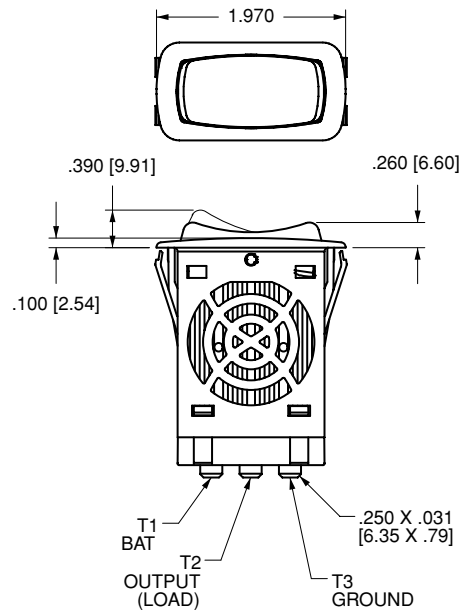


13 LEGEND #2

00 No legend **FC** DIM **FE** BRIGHT
For additional legend options, see page 69 of this catalog.

NOTES

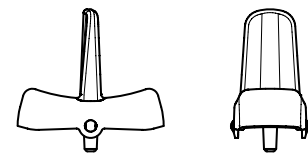
- 1 Custom colors are available. Consult factory.



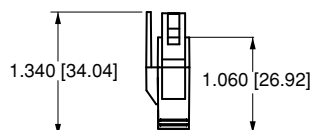
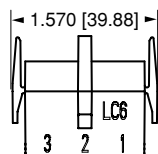
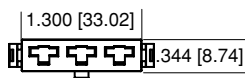
MOUNTING HOLE

Panel Thickness Range

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



PADDLE STYLE ACTUATOR



Q.C. SELECTION GUIDE

COMPANY SERIES	PACKARD PART NO.	WIRE GAGE	
		AWG	MM2
PACKARD METRI-PACK 630 SERIES TIN PLATED BRASS	12084590	12	3.0
	12052224	12	3.0
	12015870	16-14	2.0-1.0
	12015869	20-18	1.0-.80
	12020035	22-18 (2 REQ'D)	.80-.50 (2 REQ'D)
	12052222	20-22	.50-.35

LMR-Series Mirror Rotate Control



As an extension of the L-Series family of control products, the LMR-Series provides the means to control one or two mirrors and up to four separate motors from one easy to operate joy stick control. When used in conjunction with our dimmer control, and wiper/washer control, Carling Technologies provides a solution to most any dashboard control need within the Transportation market.

Actuator

4 axis joy stick style

Electrical

1A 14V; .5A 28V

Sealing

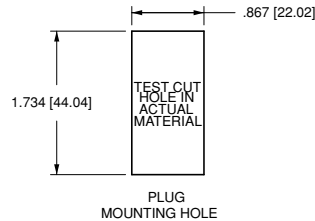
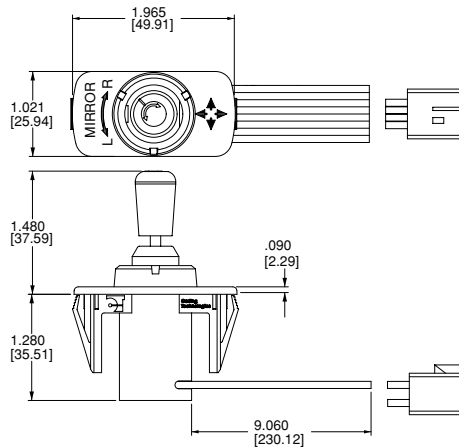
internal boot and potted wire leads protect critical components from dust and moisture

Termination¹

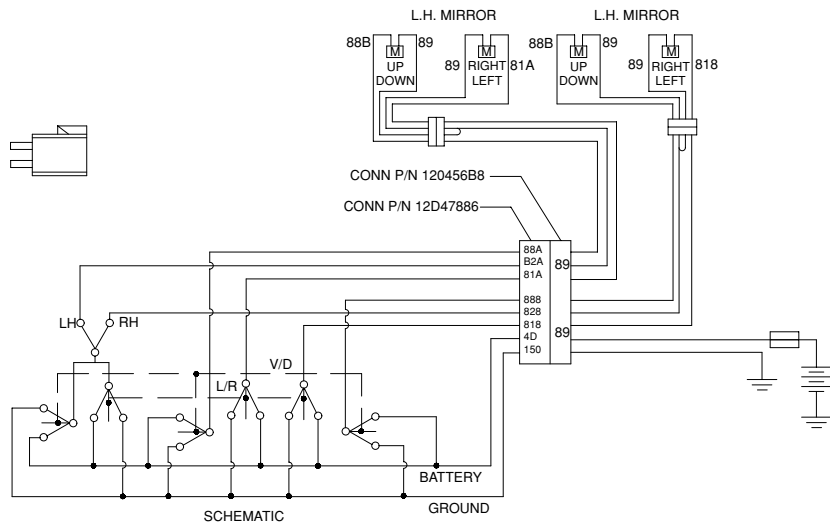
9" wire leads with Delphi-Packard connectors #12047886

Mechanism

Sliding contacts in conjunction with a circuit board



WIRE	COLOR	CAV I.D.
40	ORANGE	A
81A	WHITE	B
82A	LT. BLUE	C
88A	YELLOW	D
88B	YEL-BLK ST.	E
82B	LT. BL -BLK ST.	F
81B	WHT-NLK ST.	G
150	BLACK	H



LMR - 01 - 1

1
Base Part Number

2
Color

3
Legend

1 BASE PART NUMBER: SERIES/RATING/FUNCTION/TERMINATION

LMR 2 position (left, right), 4 axis (N,S,E,W) with wire leads

2 ACTUATOR /BRACKET COLOR

01 black

3 LEGEND²

- Z** no legend
- 1** 2 arrows symbol (left, right)
- 2** 4 arrows symbol (front, back and left, right)

NOTES

¹ Compatible with Delphi-Packard #12045688.

² All legends are imprinted in white. All product supplied with Mirror L & R legend on top of bracket and detent and directional legend on actuator.

Delphi-Packard is a registered trademark of Delphi-Packard Electrical Systems, Warren, Ohio.

LW-Series Wiper/Washer Control



Keeping in step with the needs of the Transportation Industry, Carling Technologies introduces yet another addition to our L-series family of Control Products, the new Wiper/Washer Control. Offering the best of both worlds, this new product combines the reliability and performance that you've come to expect from the L-Series along with sleek aesthetics to seamlessly integrate into most any dashboard design. The Wiper/Washer Control features a robust packaging design which protects critical components, offers flexibility to meet a variety of customer requirements, while controlling several functions through the use of one single Control Product. Our integrated design provides an added bonus with the cost savings realized from the reduced need for insulated wires and connectors.

Electrical

Current Rating	1 relay 8 amps, 14 VDC 4 amps, 28 VDC 2 relays 1 amps, 14 VDC 1 amps, 28 VDC
Terminals187 (7.4mm) Quick Connect terminations standard.
Electrical Properties	Reverse polarity protection Over voltage protection Cold cranking protection according to SAE J1455, Sections. 4.11.1.1.1 and 4.11.1.2.1 Transient voltage protection which includes load dump and inductive switching according to SAE J1455, sec. 4.11.2.2 Electrostatic discharge protection according to SAE J1455 Sec. 4.11.2.2.5.1 (Discharge a 150 pf capacitor that has been charged to a potential of 15kV through 150 Ohm resistor.) Meets all other EMI/EMC requirements for class C trucks.

Mechanical

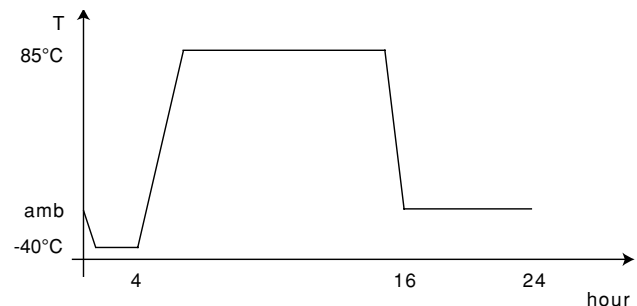
Mechanical Vibration	Sinusoidal Vibration: 10-55-10 Hz, 0.06" DA, one minute-cycle, three hours/axis Random Vibration: Three hours/axis, three mutually perpendicular axes with a test level 4G's. <u>Frequency</u> <u>Amplitude</u> 5Hz 0.16 G ² /Hz 100Hz 0.16 G ² /Hz 500Hz -3dB/octave roll-off Tests were conducted according to SAE J1455, Sec 5.7 and Sec. 4.9.4. Shock: MIL-STD-202G Method 213B, Test Condition K, 30G's, 11 ms.
Endurance Test	According to SAE J2349, March 97 for windshield washer switch for Trucks, Buses and Multipurpose Vehicles (20,000 cycle minimum).

Physical Characteristics

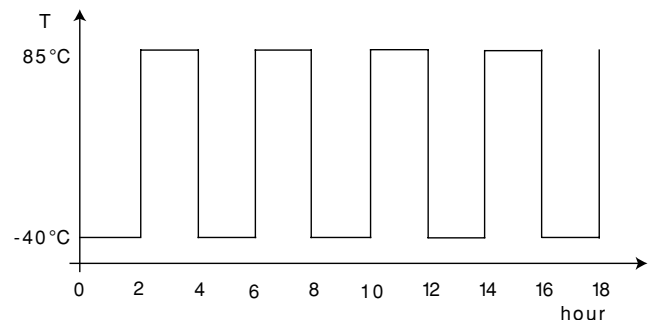
Illumination	LED, rated 100,000 hours 1/2 life
Cover	Acetate
Washer Actuator	Silicone
Toggle Actuator	Nylon 6/6 glass filled
Bracket	Nylon 6/6
Connector	Nylon 6/6 rated 85° polarized
Washer Function	Momentary
Toggle Function	Maintained Intermittent
Operation	Momentary
Weight	44 grams

Environmental

Operating Temperature . . .	-25° C to + 85° C
Temperature Cycle	According to SAE J1455, Sec. 4.1.3.1 (See Figure below)



Thermal Shock	According to SAE J1455, Sec. 4.1.3.2 (see Fig)
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Humidity	According to SAE J1455, Sec. 4.2.3 (30 cycles for 8 hrs. with maximum temperature of 85°C and 95% relative humidity.)
Dust Bombardment	According to SAE J1455, Sec. 4.7.3 (with dust concentration of 0.88gm/m ³ for 24 hours.)
Salt Spray	MIL-STD-202G, Method 101D for 96 hours.

NOTES:
For more detailed specifications, consult factory.

LW **1** **A** **1** **1** **Z** - **1** **1** **AA** **1** **AA**

1 Series 2 Rating 3 Intermittent Timing 4 Wiper/Washer Timing 5 Lamp #1 6 Lamp #2 7 Bracket Color 8 Rocker/Paddle Color 9 Legend One 10 Legend Orientation 11 Legend Two

1 SERIES

LW Wiper/Washer Control with six intermittent positions: low, high, wash/wipe

2 RATING¹

1	8A, 14VDC (1 relay)	4	1A, 14VDC (1 relay)
2	4A, 28VDC (1 relay)	5	1A, 14VDC (2 relay)
3	1A, 14VDC (1 relay)	6	1A, 28VDC (2 relay)

3 INTERMITTENT TIMING

A 2-15 seconds

4 WIPER/WASHER TIMING

1 3 seconds 2 4 seconds

5 LAMP #1 (above wash)

Z	no lamp	2	red LED
1	green LED	3	amber LED

6 LAMP #2 (above wipe)

Z	no lamp	2	red LED
1	green LED	3	amber LED

7 BRACKET COLOR

1 black

8 ROCKER/PADDLE COLOR

1 black

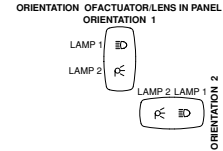
9 LEGEND #1

00 No legend

For legend options, see page 69 of this catalog.

10 LEGEND ORIENTATION

0 No legend
1 vertical (lamp 1 on top)
2 horizontal (lamp 1 on right)

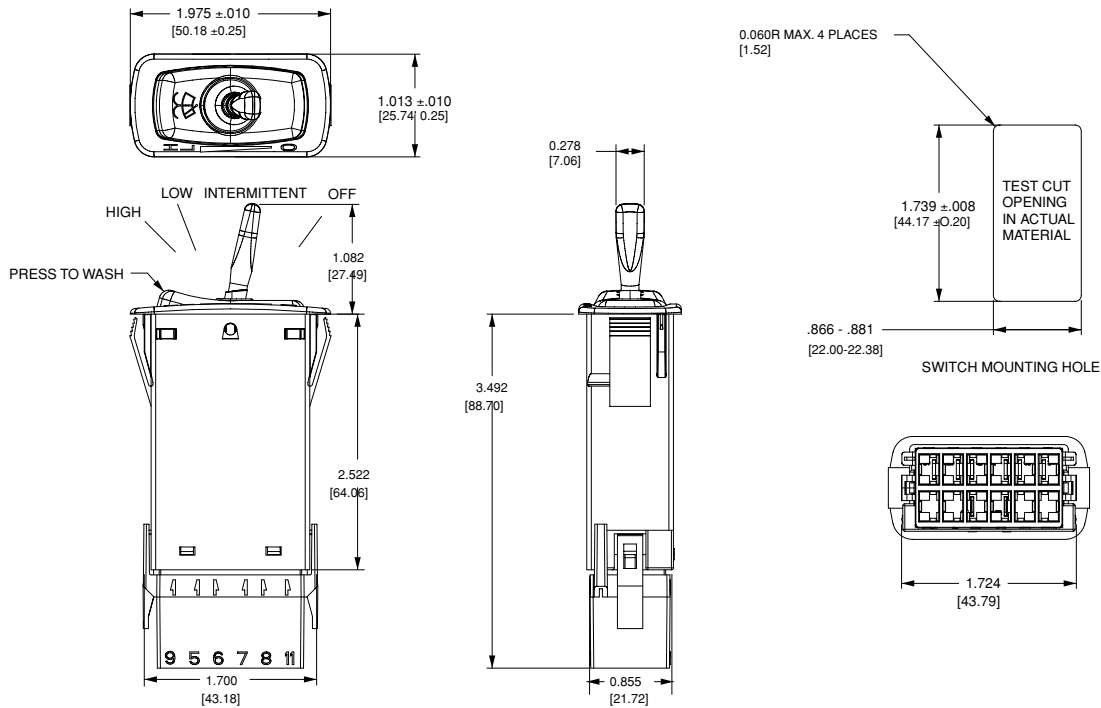

11 LEGEND #2

00 No legend

For legend options, see page 69 of this catalog.

NOTES

1 Relay coil current is 1A max. Relay must have an arc suppression in parallel with the coil.


















Terminology

Agency data	UL File #E7560 CSA File # LR9280
Single Pole (SP)	A switch device that opens, closes or changes connection of a single conductor in an electrical circuit.
Double Pole (DP)	A switch device that opens, closes or changes connection of two conductors in an electrical circuit.
Single Throw (ST)	A switch that opens, closes or completes a circuit at only one of the extreme positions of its actuator.
Double Throw (DT)	A switch that opens, closes or completes a circuit at both extreme positions of its actuator.
Normally Open (NO)	A momentary switch where one or more circuits are open when the switch actuator is at rest (the normal position.)
Normally Closed (NC)	A momentary switch where one or more circuits are closed when the switch actuator is at rest (the normal position.)
Power Rating	A switches current handling capability measured in amperes, horsepower, lamp loads or combinations thereof, in conjunction with applicable voltage levels.
L Rating	Denotes the ability of a switch to handle the initial high inrush of a Tungsten Filament Lamp on AC voltage only.
T Rating	Denotes the ability of a switch to handle the initial high inrush of a tungsten filament lamp on AC or DC voltage.
Typical European Rating	<div> <div>16 resistive load amperage</div> <div>(4) motor load amperage</div> <div>A amperage</div> <div>250V voltage</div> <div>~ AC</div> <div>T85 max. operating temp. in centigrade</div> <div>μ micro-gap (<3mm) approved</div> </div>
Microgap (μ)	European marking required for contact separation of less than 3mm. Switches with microgap (μ) approval are not acceptable as the safety disconnect of equipment from the main power source. The equipment requires an additional means for safe disconnection from the main power source such as a cord and plug.
Bulb Life	Neon 25,000 hours Incandescent 25,000+ hours LED 100,000 hours
Lamp Characteristics	Neon (120-240V) .002A Current Draw Incandescent 6V .20A Current Draw 12-14V .08A Current Draw 18V .04A Current Draw 24-28V .04A Current Draw

Agency Approvals

These marks are granted by national certification bodies for use on products which comply with their specifications.

Agency	Country	Mark
UL	USA	
BEAB	United Kingdom	
CSA	Canada	
VDE	Germany	
TUV	Germany	
SEMKO	Sweden	
NEMKO	Norway	
KEMA	Netherlands	
DEMKO	Denmark	
UTE(USE)	France	
SEV	Switzerland	
OVE	Austria	
IMQ	Italy	
CCC	China	
FIMKO	Finland	

Other Carling Technologies Catalogs

Thermal Circuit Protectors



This catalog details Carling's thermal circuit protection products. Thermal protectors range from 0.1 to 40 amps. Front Panel Snap-in Mounting styles and Quick Connect

Terminals are included. Worldwide certifications, including UL1500, TUV and CE marked.

Power Distribution Centers



This catalog includes the complete line of standard AC and DC Power Distribution Centers and Battery Disconnects. All products are designed to fit into industry standard

racks, from 1RU to 3RU, and utilize Carling hydraulic/magnetic circuit breakers.

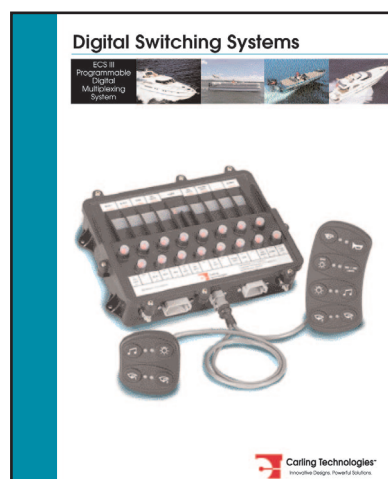
Circuit Protection



This catalog details the complete line of Carling circuit protection products including hydraulic/magnetic circuit breakers, thermal circuit protectors, and ground fault breakers. Breakers range

from 0.1 to 700 amps Hi-inrush delay curves, Front Panel Snap-in Mounting styles, Rockerguard Bezels, Dual-Coil functions, and Quick Connect Terminals are included. Worldwide certifications, including UL1500, UL489 and CE marked.

Digital Switching Systems



This catalog details Carling's Digital Switching Systems, including the Electronic Control System III, (ECS III). The ECS III features the latest in digital multiplex technology, creating a safer and

fully configurable control system for the marine environment. The ECS III eliminates complex wiring while increasing switching features and functionality, and simplifies troubleshooting.

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