

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 Carlingswitch'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	R/LRA/RSC	621/651	622/632	RG/LRG	T/LTA/TG/LTG
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	V	L	LTIL/LTIG/TIG	R135	700/800
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
See pages	43-56	60-68	19	41	42

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 See pages	UL, CSA 28-29	UL, CSA, VDE 25-27	UL, CSA 31	UL, CSA 30	UL, CSA 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 See pages	UL, CSA 37-38	UL, CSA, TUV 39-40	UL, CSA 33	UL, CSA 34	UL, CSA 35-36

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

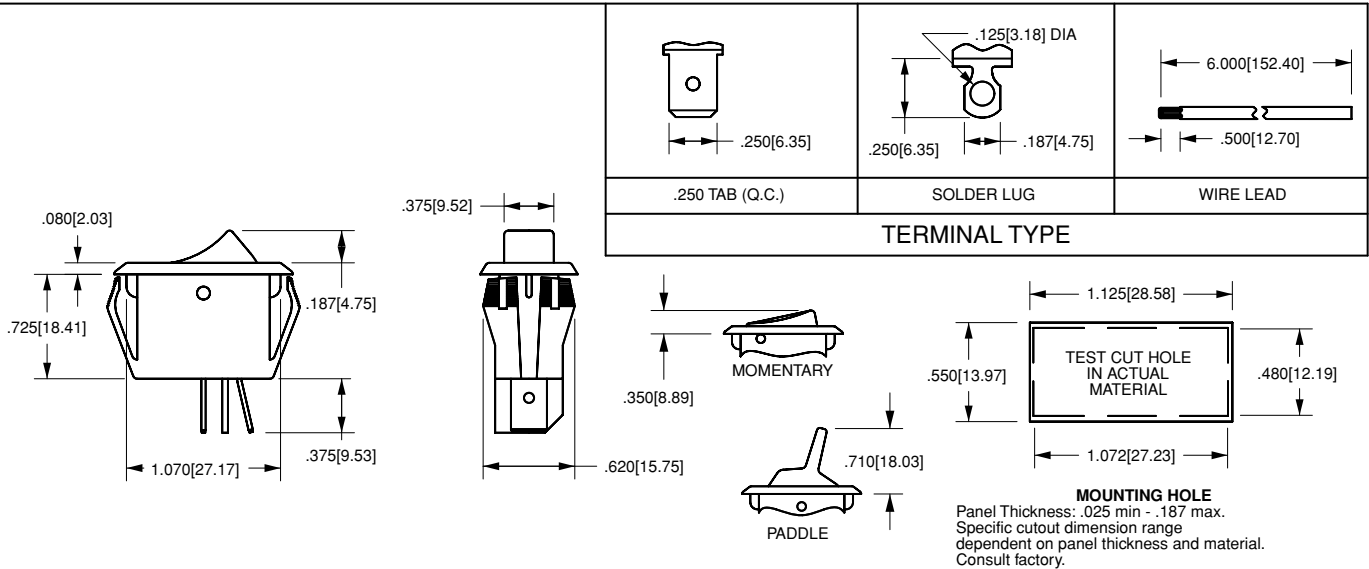
100,000 cycles

Mechanical Life

100,000 cycles

Operating Temperature

32°F to 185°F (0°C to 85°C)



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

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

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		OVAL	
B	black	1	black
W	white	2	white

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

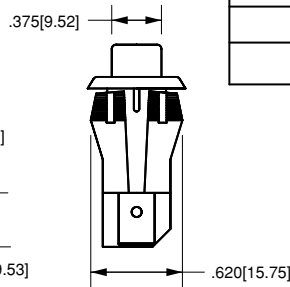
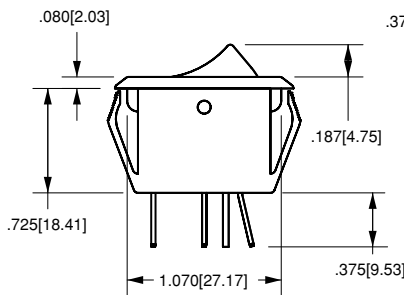
100,000 cycles

Mechanical Life

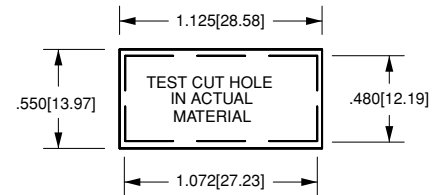
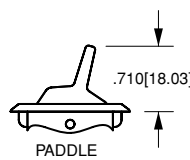
100,000 cycles

Operating Temperature

32°F to 185°F (0°C to 85°C)



.250[6.35]	.125[3.18] DIA .250[6.35] .187[4.75]	6.000[152.40] .500[12.70]
.250 TAB (Q.C.)	SOLDER LUG	WIRE LEAD
TERMINAL TYPE		



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/RATING*/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

<i>translucent</i>		<i>clear</i>	
A	amber	A	amber
C	white	C	clear
P	yellow	G	green
S	red	B	blue
W	pale red	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

125N 125 volts neon

250N 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

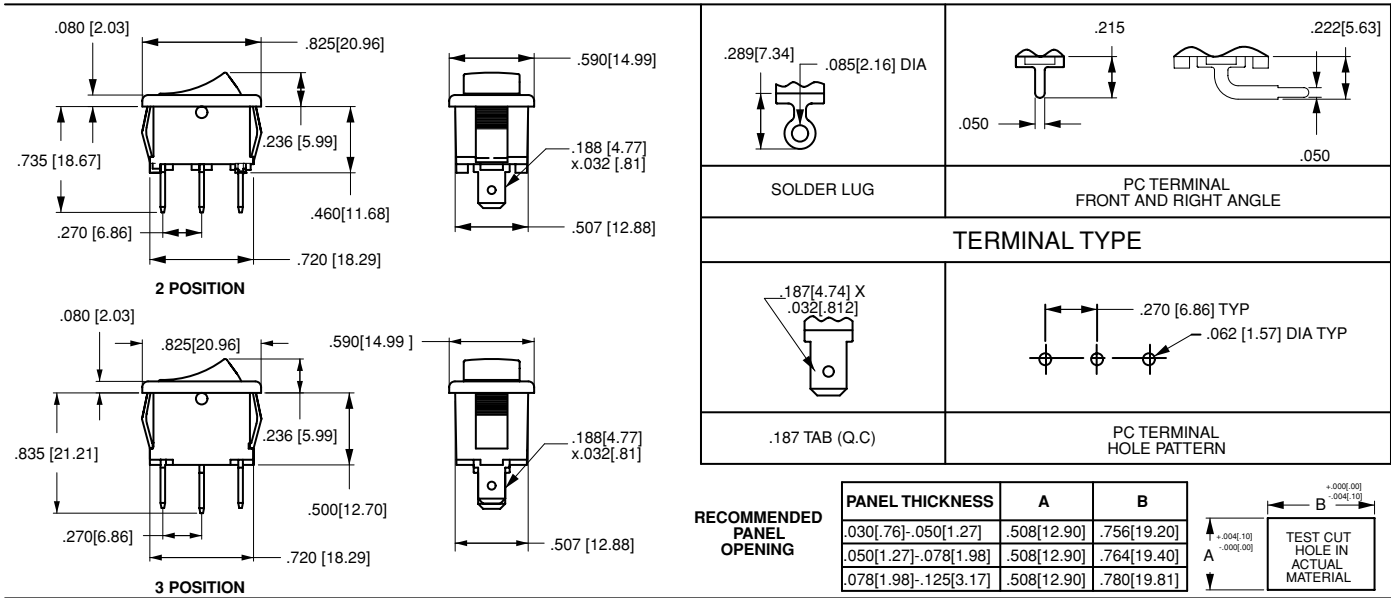
100,000 cycles- maintained
50,000 cycles- momentary
50,000 cycles- T-rating

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 COLOR ³	
B	black
W	white

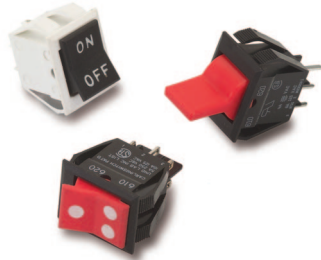
4 BASE COLOR ³	
B	black
W	white

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.
1 Rated 12A 125VAC, 6A 250 VAC, 1/4HP 125-250VAC.
2 Rated 8A 125-250VAC, 1/4HP 125-250VAC.
3 Additional colors available. Consult factory for details.
4 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

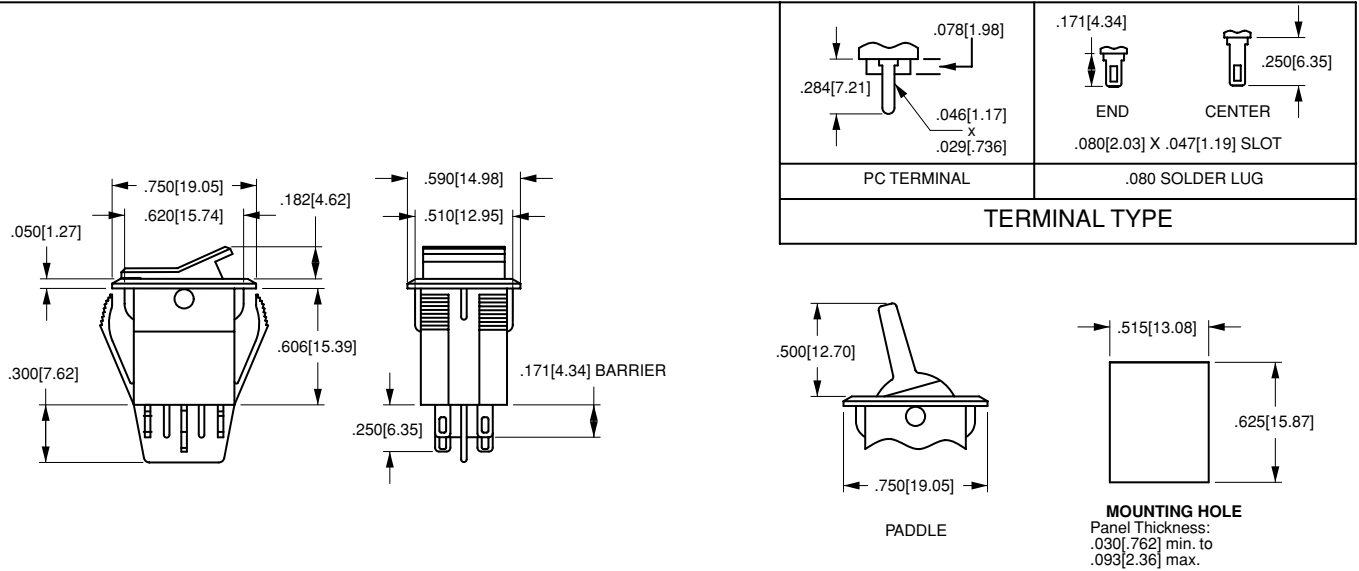
50,000 cycles- single pole
50,000 cycles- double pole

Mechanical Life

100,000 cycles

Operating Temperature

32°F to 185°F (0°C to 85°C)



62012421 - **0** - **0**

1
Base Part Number

2
Terminal Sealing

3
Legend

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

4A 250VAC; 8A 125VAC

Single Pole

	Solder Lugs	PC Term
ON-NONE-ON	62011421	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

	hot stamp
NO LEGEND	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.

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

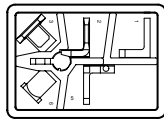
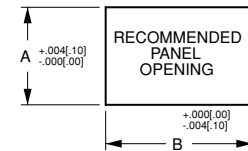
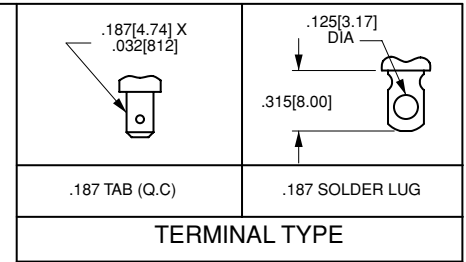
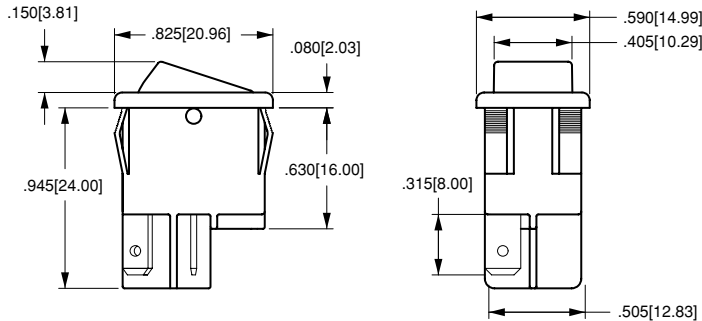
50,000 cycles

Mechanical Life

100,000 cycles

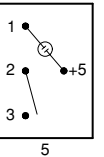
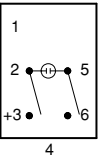
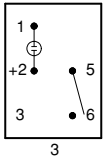
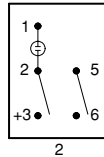
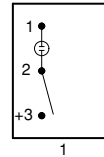
Operating Temperature

32°F to 185°F (0°C to 85°C)



BOTTOM VIEW OF TERMINAL ARRANGEMENT

632 SCHEMATIC



UNBALLASTED

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	.187 Tabs
622121	622122
622221	622222
632121	632122
632321	632322
632521	632522
632221	632222
632421	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 hot stamp
OFF-ON vertical N
OFF-ON horizontal A
I-O horizontal B
I-O vertical D
O on rocker radius 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.

RG-Series Single/Double Pole Rocker & Paddle Switches



The double pole version of the R-Series incorporates the same sleek lines as the original Corvette, 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.

Dielectric Strength

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

Electrical Life

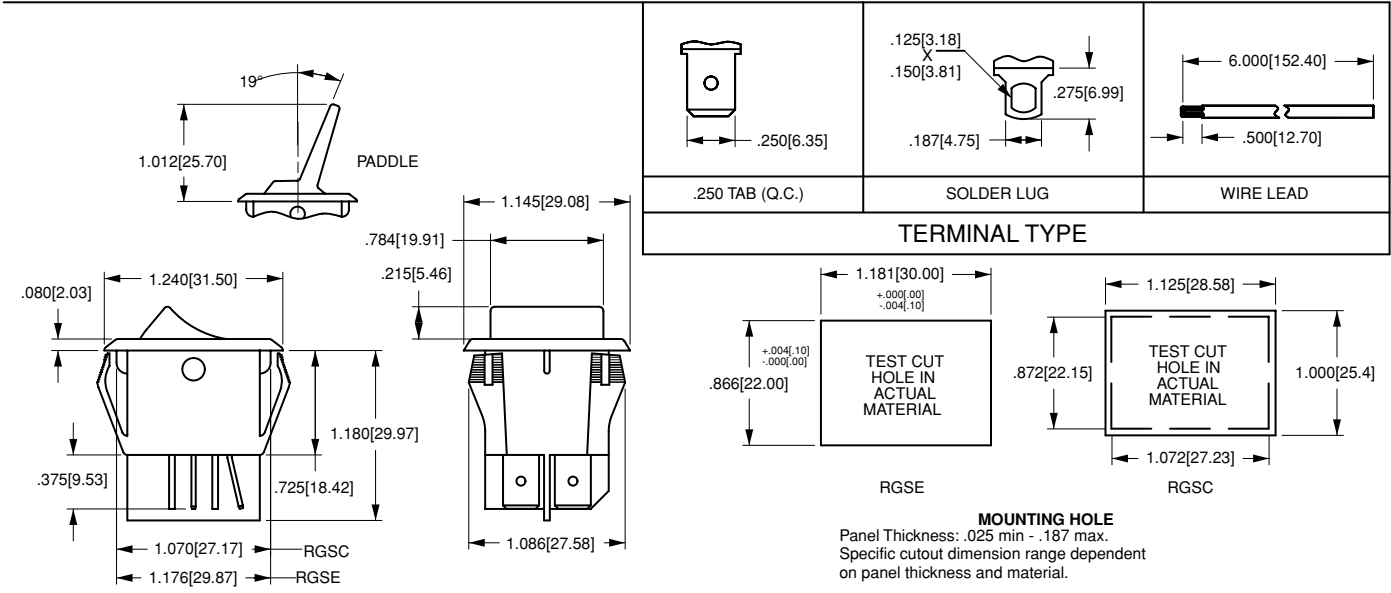
50,000 cycles

Mechanical Life

100,000 cycles

Operating Temperature

-40°F to 185°F (-40°C to 85°C)



RGSCA901 - **R** - **B** - **B** - **A**

1 Base Part Number 2 Actuator Style 3 Actuator Color 4 Bezel Color 5 Rocker Legend

1 BASE PART NUMBER: SERIES/CIRCUITRY/RATING ¹ /TERMINATION			
15A 250 VAC, 20A 125 VAC, 3/4 HP 125-250 VAC, 14(6)A 250 VAC			
	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 COLOR ¹	
B black	W white

4 BEZEL COLOR ¹	
B black	W white

5 ROCKER LEGEND	
NO LEGEND	0 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

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

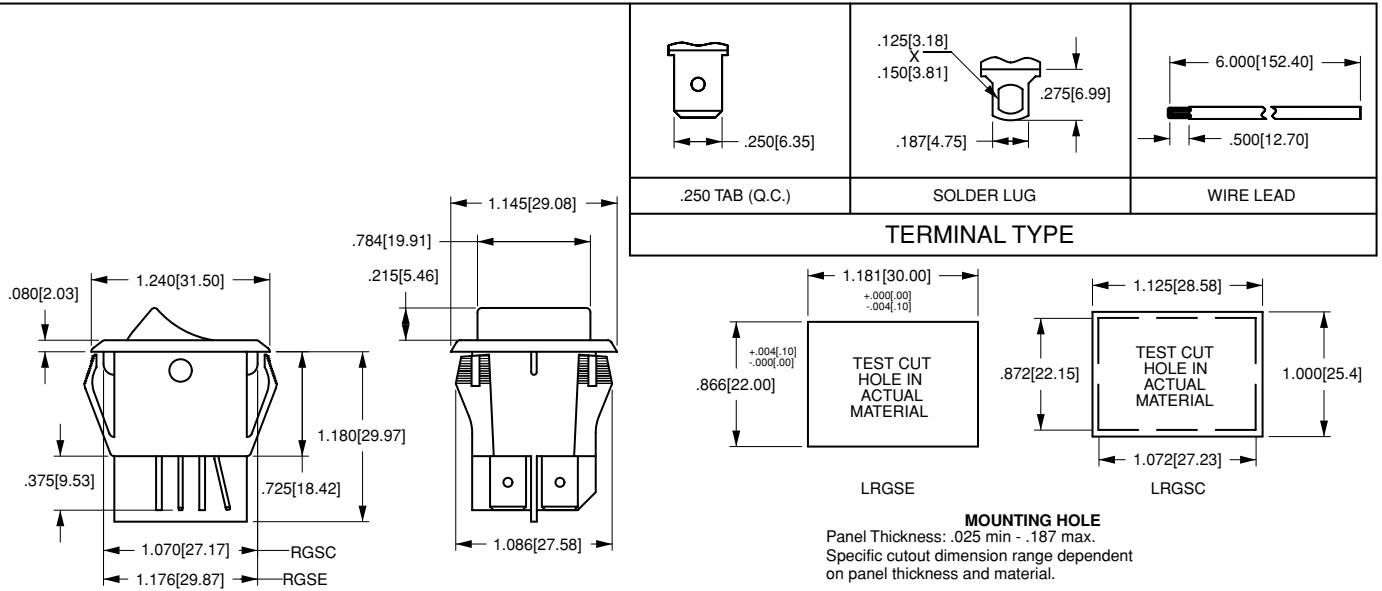
50,000 cycles

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/RATING¹/TERMINATION

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

Standard Base	Solder Lugs	.250 Tabs	Wire Leads
OFF-NONE ON	LRGSCK610	LRGSCK611	LRGSCK615
<i>European Base</i> (22 x 30 mm cutout)			
OFF-NONE ON (Single Pole)	LRGSEK610	LRGSEK611	LRGSEK615
15A 6-24 V ²			
<i>Standard Base</i>			
OFF-NONE ON	LRGSCK510	LRGSCK511	LRGSCK515
<i>European Base</i> (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	L ³	lime green
B ^{3,5}	blue	P	yellow
C ¹	white/clear	R	red (clear)
G ⁵	green	S	red
		W	pale red

4 BEZEL COLOR¹

B black W white

5 ROCKER LEGEND

	hot stamp
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

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

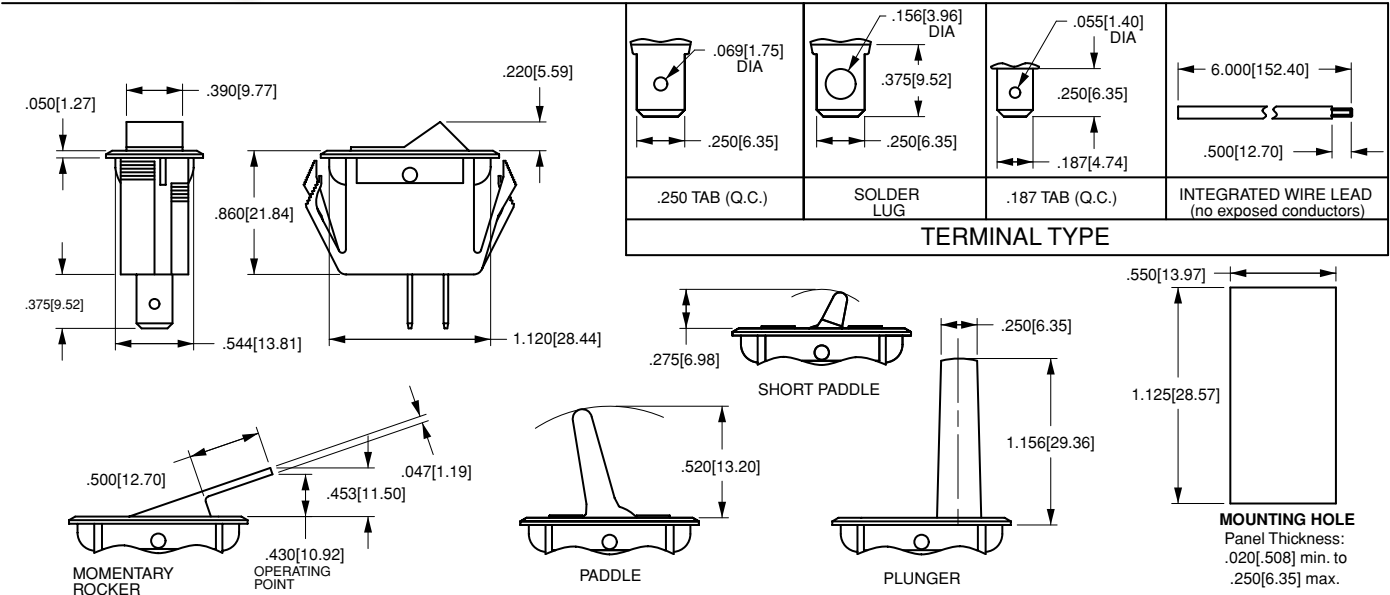
100,000 cycles

Mechanical Life

100,000 cycles

Operating Temperature

32°F to 185°F (0°C to 85°C)



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.

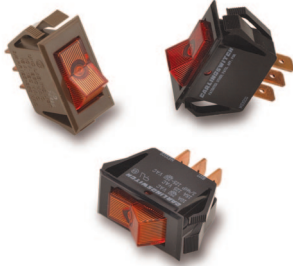
4 Additional ratings are available. Consult factory.

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

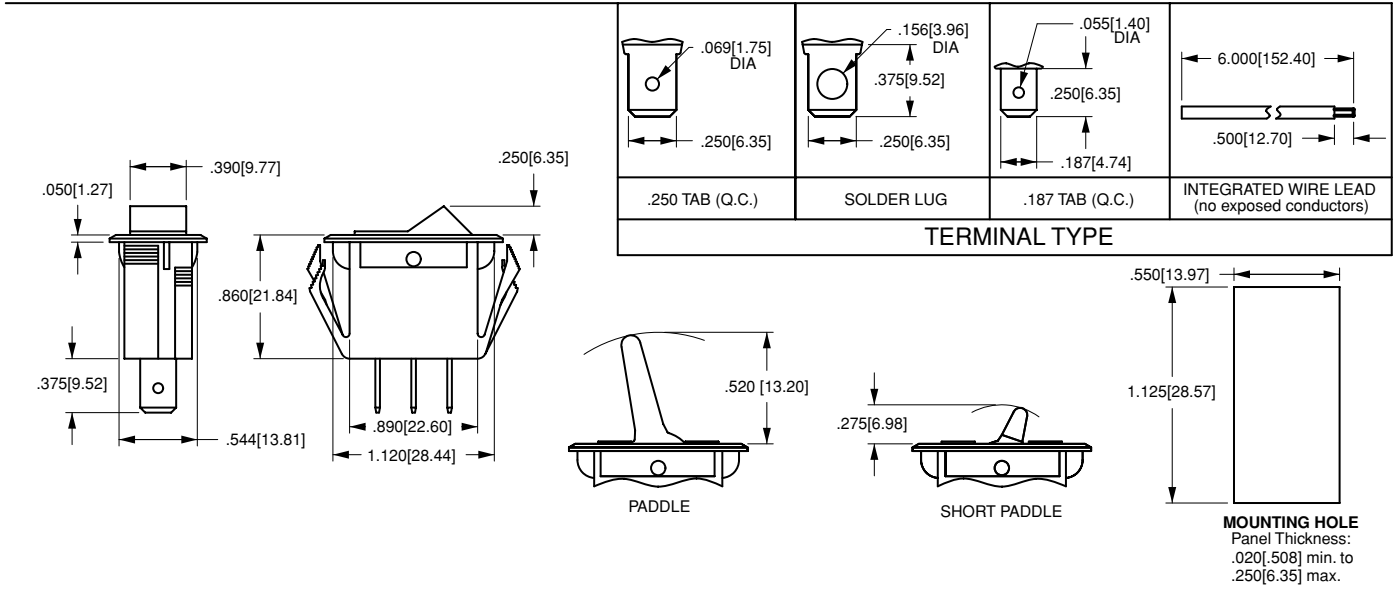
100,000 cycles

Mechanical Life

100,000 cycles

Operating Temperature

32°F to 185°F (0°C to 85°C)



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/RATING¹/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 STYLE²	
T rocker	PS short paddle
P paddle	

3 ACTUATOR COLOR³	
A amber	R red
C clear	G green ²

4 BEZEL COLOR¹	
B black	W white

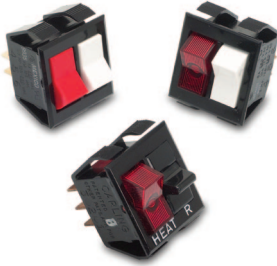
5 LENS COLOR^{2,3}	
/ no lens	-G green
-A amber	-R red
-C clear	-LU blue

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.

TTG-Series Rocker Switches



The TTG-Series Mini Tippette 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

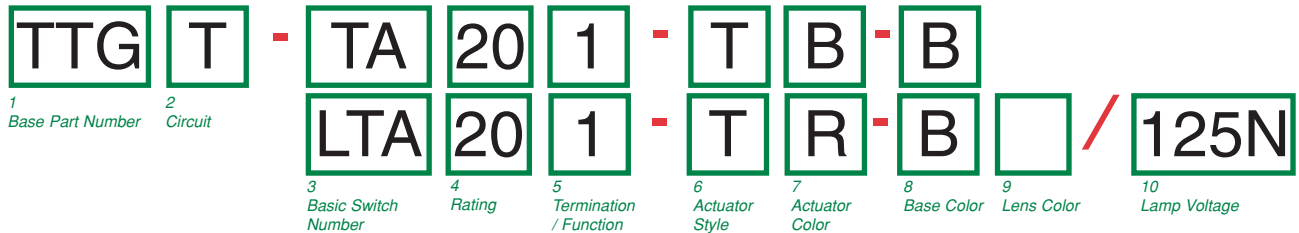
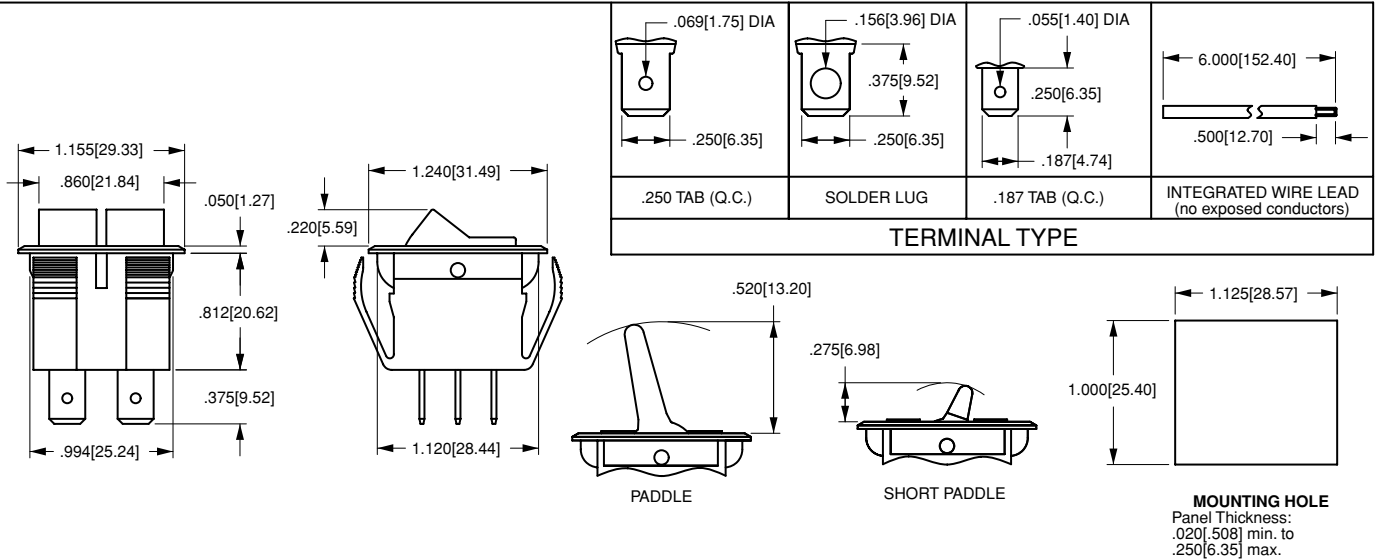
25,000 cycles- momentary

Mechanical Life

100,000 cycles

Operating Temperature

32°F to 150°F (0°C to +65.6°C)



<p>1 BASE PART NUMBER: SERIES¹ TTG Two Single Pole switches in one base</p>	<p>6 ACTUATOR STYLE P paddle PS short paddle T rocker</p>																																			
<p>2 CIRCUIT See Circuit Designation Chart Page 17.</p>	<p>7 ACTUATOR COLOR unlighted² B black lighted³ W white A amber C clear G green LU blue R red</p>																																			
<p>3 BASIC SWITCH NUMBER TA ON-NONE-OFF TC ON-OFF-ON TB ON-NONE-ON LTA ON-NONE-OFF, lighted</p>	<p>8 BASE COLOR² B black W white</p>																																			
<p>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</p>	<p>9 LENS COLOR³ A amber G green R red C clear LU blue W white</p>																																			
<p>5 TERMINATION/FUNCTION</p> <table border="1"> <thead> <tr> <th></th> <th>solder lug</th> <th>.250 tab QC</th> <th>.187 tab QC</th> <th>wire leads</th> </tr> </thead> <tbody> <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> </tbody> </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	<p>10 LAMP VOLTAGE incandescent 6V 6 volt 12V 12 volt 18V 18 volt 24V 24 volt 28V 28 volt</p> <p>neon³ 125N 125 volt neon 250N 250 volt neon</p>
	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																																

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 Tippet 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

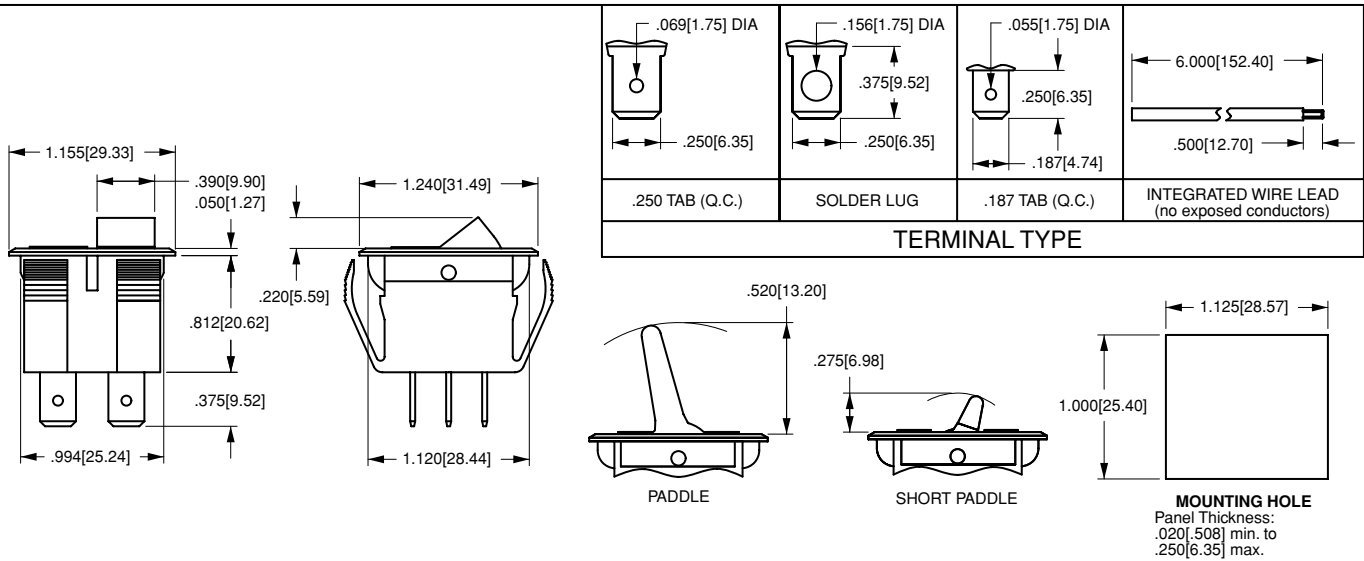
50,000 cycles- maintained
25,000 cycles- momentary

Mechanical Life

100,000 cycles

Operating Temperature

32°F to 150°F (0°C to +65.6°C)



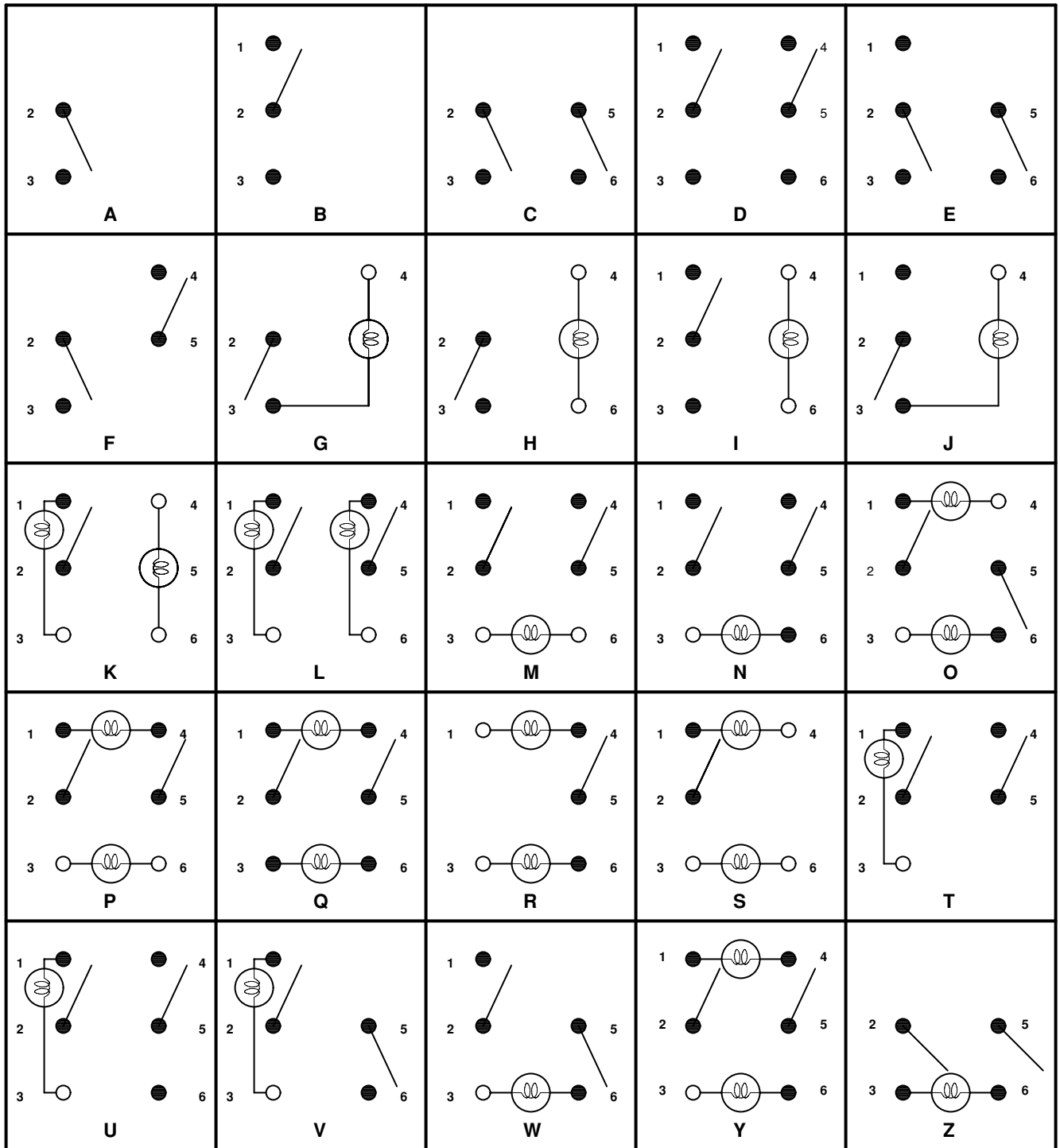
TLG G - D R - TA 20 1 - T B - B / 125N

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

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				
unlighted			lighted²	
B	black	A	amber	
W	white	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
C	clear	LU	blue	W
12 LAMP VOLTAGE				
incandescent			neon²	
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 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.



● CONTACT TERMINAL
Will make contact with switching lever

● CONTACT TERMINAL AND SWITCH LEVER

○ ISOLATED TERMINAL
Does not make contact with switching 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

Physical

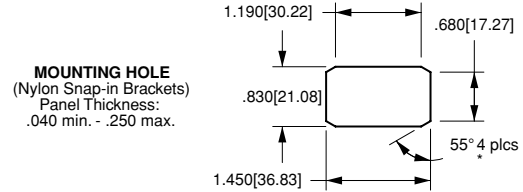
Lighted	Incandescent - rated 10,000 hours Neon - rated 25,000 hours
Seals	Bracket - Actuator WBL/MBL optional external gasket panel seal
Base	Phenolic (150°C)
Rocker/Bracket	Nylon 66 (105°C)

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 6-28VDC⁷
Single Pole in Double Pole base²

solder .250		screw wire		lug tab		term. leads		
TIGA50	TIGA51	TIGA54	TIGA55	ON-NONE-OFF	TIGK50	TIGK51	TIGK54	TIGK55
TIGA5A	TIGA5B	TIGA5E	TIGA5F	(ON)-NONE-OFF	TIGK5A	TIGK5B	TIGK5E	TIGK5F
TIGA5L	TIGA5M	TIGA5S	TIGA5T	ON-NONE-(OFF)	TIGK5L	TIGK5M	TIGK5S	TIGK5T
TIGB50	TIGB51	TIGB54	TIGB55	ON-NONE-ON	TIGL50	TIGL51	TIGL54	TIGL55
TIGB5A	TIGB5B	TIGB5E	TIGB5F	ON-NONE-(ON)	TIGL5A	TIGL5B	TIGL5E	TIGL5F
TIGC50	TIGC51	TIGC54	TIGC55	ON-OFF-ON	TIGM50	TIGM51	TIGM54	TIGM55
TIGC5A	TIGC5B	TIGC5E	TIGC5F	ON--OFF-(ON)	TIGM5A	TIGM5B	TIGM5E	TIGM5F
TIGC5L	TIGC5M	TIGC5S	TIGC5T	(ON)-OFF-(ON)	TIGM5L	TIGM5M	TIGM5S	TIGM5T

Double Pole

solder .250		screw wire		lug tab		term. leads		
TIGK50	TIGK51	TIGK54	TIGK55	ON-NONE-OFF	TIGK50	TIGK51	TIGK54	TIGK55
TIGK5A	TIGK5B	TIGK5E	TIGK5F	(ON)-NONE-OFF	TIGK5A	TIGK5B	TIGK5E	TIGK5F
TIGK5L	TIGK5M	TIGK5S	TIGK5T	ON-NONE-(OFF)	TIGK5L	TIGK5M	TIGK5S	TIGK5T
TIGL50	TIGL51	TIGL54	TIGL55	ON-NONE-ON	TIGL50	TIGL51	TIGL54	TIGL55
TIGL5A	TIGL5B	TIGL5E	TIGL5F	ON-NONE-(ON)	TIGL5A	TIGL5B	TIGL5E	TIGL5F
TIGM50	TIGM51	TIGM54	TIGM55	ON-OFF-ON	TIGM50	TIGM51	TIGM54	TIGM55
TIGM5A	TIGM5B	TIGM5E	TIGM5F	ON--OFF-(ON)	TIGM5A	TIGM5B	TIGM5E	TIGM5F
TIGM5L	TIGM5M	TIGM5S	TIGM5T	(ON)-OFF-(ON)	TIGM5L	TIGM5M	TIGM5S	TIGM5T

Three Pole

solder .250		screw wire		lug tab		term. leads		
TIHK50	TIHK51	TIHK54	TIHK55	ON-NONE-OFF	TIHK50	TIHK51	TIHK54	TIHK55
TIHK5A	TIHK5B	TIHK5E	TIHK5F	(ON)-NONE-OFF	TIHK5A	TIHK5B	TIHK5E	TIHK5F
TIHK5L	TIHK5M	TIHK5S	TIHK5T	ON-NONE-(OFF)	TIHK5L	TIHK5M	TIHK5S	TIHK5T
TIHL50	TIHL51	TIHL54	TIHL55	ON-NONE-ON	TIHL50	TIHL51	TIHL54	TIHL55
TIHL5A	TIHL5B	TIHL5E	TIHL5F	ON-NONE-(ON)	TIHL5A	TIHL5B	TIHL5E	TIHL5F
TIHM50	TIHM51	TIHM54	TIHM55	ON-OFF-ON	TIHM50	TIHM51	TIHM54	TIHM55
TIHM5A	TIHM5B	TIHM5E	TIHM5F	ON--OFF-(ON)	TIHM5A	TIHM5B	TIHM5E	TIHM5F
TIHM5L	TIHM5M	TIHM5S	TIHM5T	(ON)-OFF-(ON)	TIHM5L	TIHM5M	TIHM5S	TIHM5T

VDE APPROVED
10A 250VAC, 15A 125VAC, 12(6)A 250VAC T85
Single Pole in Double Pole base²

solder .250		wire		lug tab		lead	
TIGA90	TIGA91	TIGA95		ON-NONE-OFF	TIGK90	TIGK91	TIGK95
TIGB90	TIGB91	TIGB95		ON-NONE-ON	TIGL90	TIGL91	TIGL95
TIGC90	TIGC91	TIGC95		ON-OFF-ON	TIGM90	TIGM91	TIGM95

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

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 ⁵
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. .187 tab and PC terminations are also available. Consult factory for catalog number callout.
 - 10 () momentary
 - 11 Not available with WBL or MBL style brackets.
 - 12 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.

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 Serrations Gloss ^{1, 12}	7N	Witch's Hat/Narrow ¹⁵
2L	Long Smooth/Narrow ¹⁶	7P	Witch's Hat/Wide ¹⁵

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 .250		screw wire		lug tab		term. leads		
LTILA50	LTILA51	LTILA54	LTILA55	ON-NONE-OFF	LTIGK50	LTIGK51	LTIGK54	LTIGK55
LTILA5A	LTILA5B	LTILA5E	LTILA5F	(ON)-NONE-OFF	LTIGK5A	LTIGK5B	LTIGK5E	LTIGK5F
LTILA5L	LTILA5M	LTILA5S	LTILA5T	ON-NONE-(OFF)	LTIGK5L	LTIGK5M	LTIGK5S	LTIGK5T
LTILB50	LTILB51	LTILB54	LTILB55	ON-NONE-ON	LTIGL50	LTIGL51	LTIGL54	LTIGL55
LTILB5A	LTILB5B	LTILB5E	LTILB5F	ON-NONE-(ON)	LTIGL5A	LTIGL5B	LTIGL5E	LTIGL5F
LTILC50	LTILC51	LTILC54	LTILC55	ON-OFF-ON	LTIGM50	LTIGM51	LTIGM54	LTIGM55
LTILC5A	LTILC5B	LTILC5E	LTILC5F	ON--OFF-(ON)	LTIGM5A	LTIGM5B	LTIGM5E	LTIGM5F
LTILC5L	LTILC5M	LTILC5S	LTILC5T	(ON)-OFF-(ON)	LTIGM5L	LTIGM5M	LTIGM5S	LTIGM5T

illuminated Double Pole

solder .250		screw wire		lug tab		term. leads		
LTIGK50	LTIGK51	LTIGK54	LTIGK55	ON-NONE-OFF	LTIGK50	LTIGK51	LTIGK54	LTIGK55
LTIGK5A	LTIGK5B	LTIGK5E	LTIGK5F	(ON)-NONE-OFF	LTIGK5A	LTIGK5B	LTIGK5E	LTIGK5F
LTIGK5L	LTIGK5M	LTIGK5S	LTIGK5T	ON-NONE-(OFF)	LTIGK5L	LTIGK5M	LTIGK5S	LTIGK5T
LTIGL50	LTIGL51	LTIGL54	LTIGL55	ON-NONE-ON	LTIGL50	LTIGL51	LTIGL54	LTIGL55
LTIGL5A	LTIGL5B	LTIGL5E	LTIGL5F	ON-NONE-(ON)	LTIGL5A	LTIGL5B	LTIGL5E	LTIGL5F
LTIGM50	LTIGM51	LTIGM54	LTIGM55	ON-OFF-ON	LTIGM50	LTIGM51	LTIGM54	LTIGM55
LTIGM5A	LTIGM5B	LTIGM5E	LTIGM5F	ON--OFF-(ON)	LTIGM5A	LTIGM5B	LTIGM5E	LTIGM5F
LTIGM5L	LTIGM5M	LTIGM5S	LTIGM5T	(ON)-OFF-(ON)	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

2 ACTUATOR STYLE⁴

1S	Angular/Smooth Face Gloss ¹
1C	Angular/Cross Serations Gloss ¹
1L	Angular/Longline Serrations 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

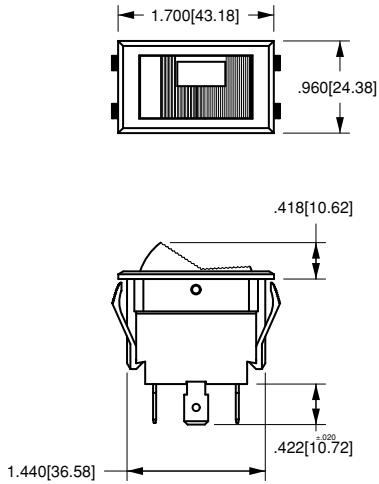
NBL	Nylon Black
WBL	Watershedding Black ⁵
MBL	Marine Style Black ^{5, 6}
FN	Metal Snap-In ^{4, 6}
FN BLK	Black Metal Snap-In ^{4, 6}
FN SS	Stainless Steel Snap-In ^{4, 6}

6 LAMP VOLTAGE

incandescent		250N		250 volt	
125N	125 volt	250N	250 volt		
neon ⁹		250N		250 volt	
6V	6 volt	12V	12 volt	18V	18 volt
24V	24 volt	28V	28 volt		

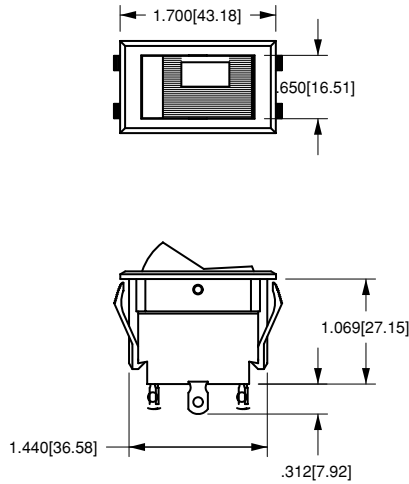
- NOTES
- 1 NBL, FN, & FW brackets only. Double pole circuits provided with 3 pole base.
 - 2 LTIL-Series with NBL, FN, & FW brackets only.
 - 3 NBL, WBL, & MBL brackets only. With 6M actuator, bracket will also be matte finish.
 - 4 1S, 1C, 1L & 7S with NBL bracket only available with LTIL-Series.
 - 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.

1C
CROSS-LINE W/ONE LENS



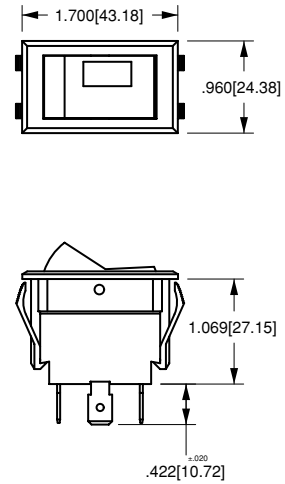
WITH .250 TAB
TERMINALS
AND NBL BRACKET

1L
LONG-LINE W/ONE LENS



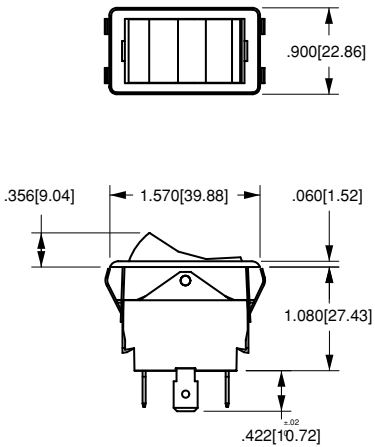
WITH SOLDER LUG
TERMINAL
AND NBL BRACKET

1S
SMOOTH W/ONE LENS



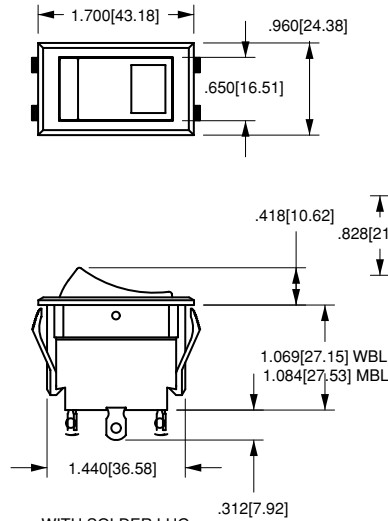
WITH .250 TAB
TERMINALS
AND NBL BRACKET

1F
FLATTED STYLE NO LENS



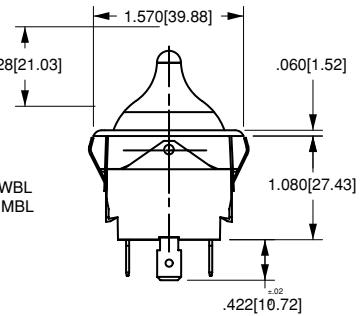
WITH .250 TAB
TERMINALS
AND FN BRACKET

6M, 6S
CURVED W/ONE LENS



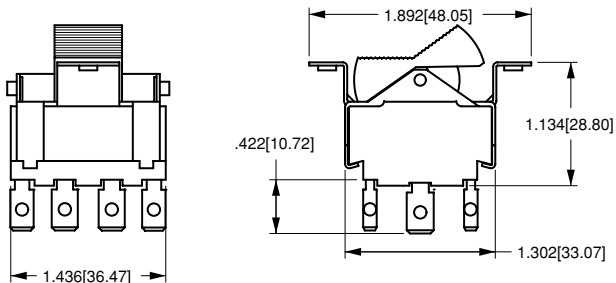
WITH SOLDER LUG
TERMINALS
AND WBL/MBL BRACKET

7S
TOGGLE-STYLE W/ONE LENS

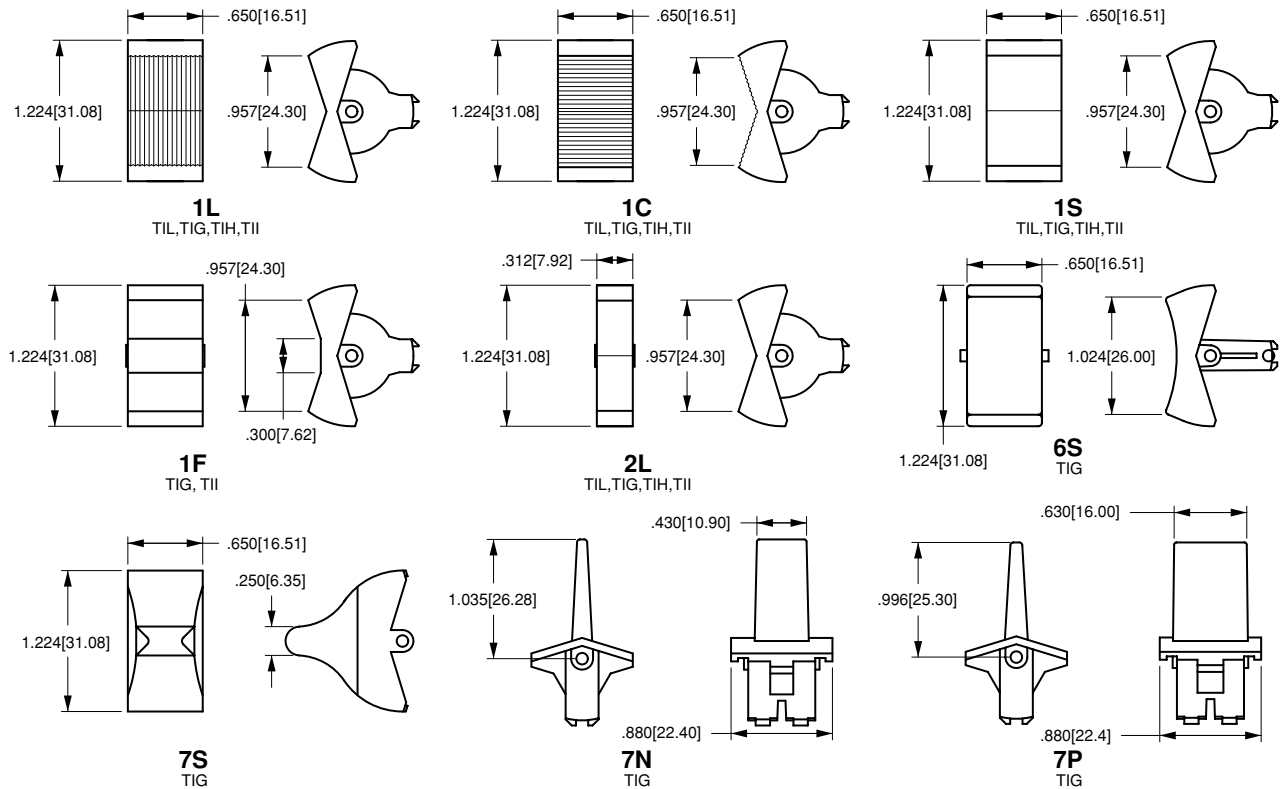
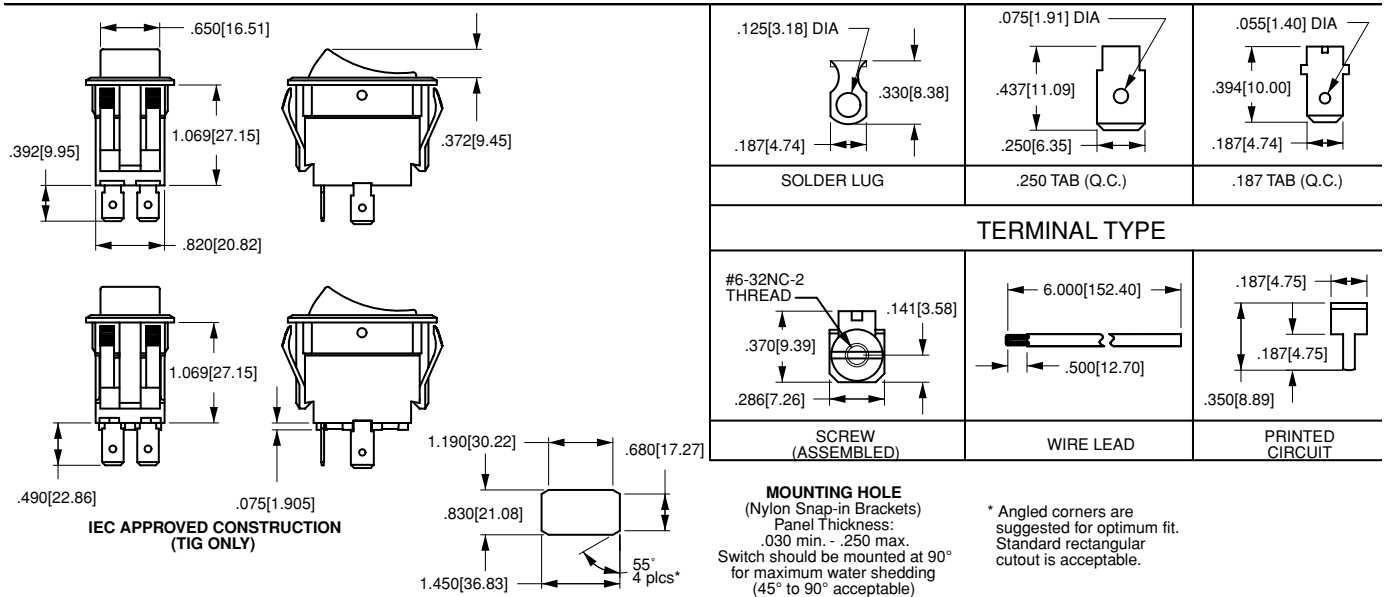


WITH .250 TAB
TERMINALS
AND FN BRACKET

1C
TII-SERIES CROSS-LINE W ONE LENS



WITH .250 TAB TERMINALS AND A BRACKET

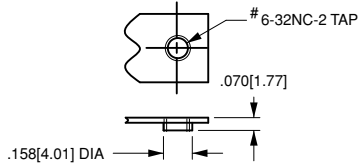


Special Circuits for Tippette Rocker Switches

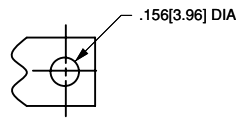
Circuit	Position 1	Position 2	Position 3
Progressive Two Circuit			
GG	BOTH CIRCUITS ON	ONE CIRCUIT ON	OFF
GG	BOTH CIRCUITS (ON)	ONE CIRCUIT ON	OFF
Single Pole Triple Throw			
GE	ON	ON	ON
Two Circuit			
GH	CIRCUIT 1 ON	BOTH CIRCUITS ON	CIRCUIT 2 ON
GP	CIRCUIT 2 ON	CIRCUIT 1 ON	OFF
Reversing Double Pole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

() Indicates momentary function.

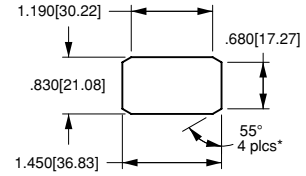
Dimensional Specifications: in. [mm]



TAPPED HOLE
Standard with
A & B Brackets



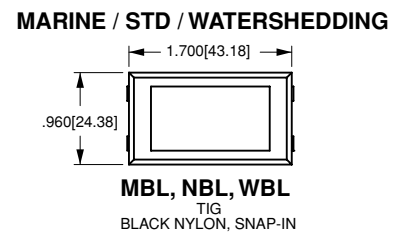
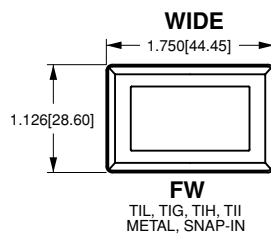
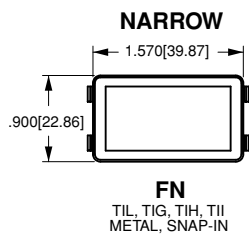
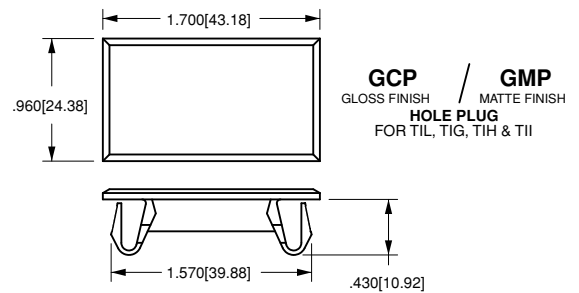
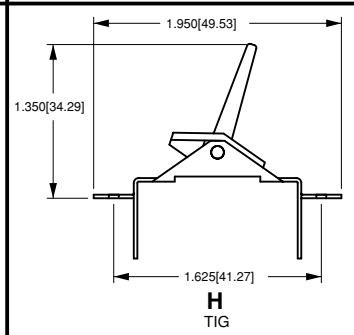
CLEARANCE HOLE
Standard with
C Bracket



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>	

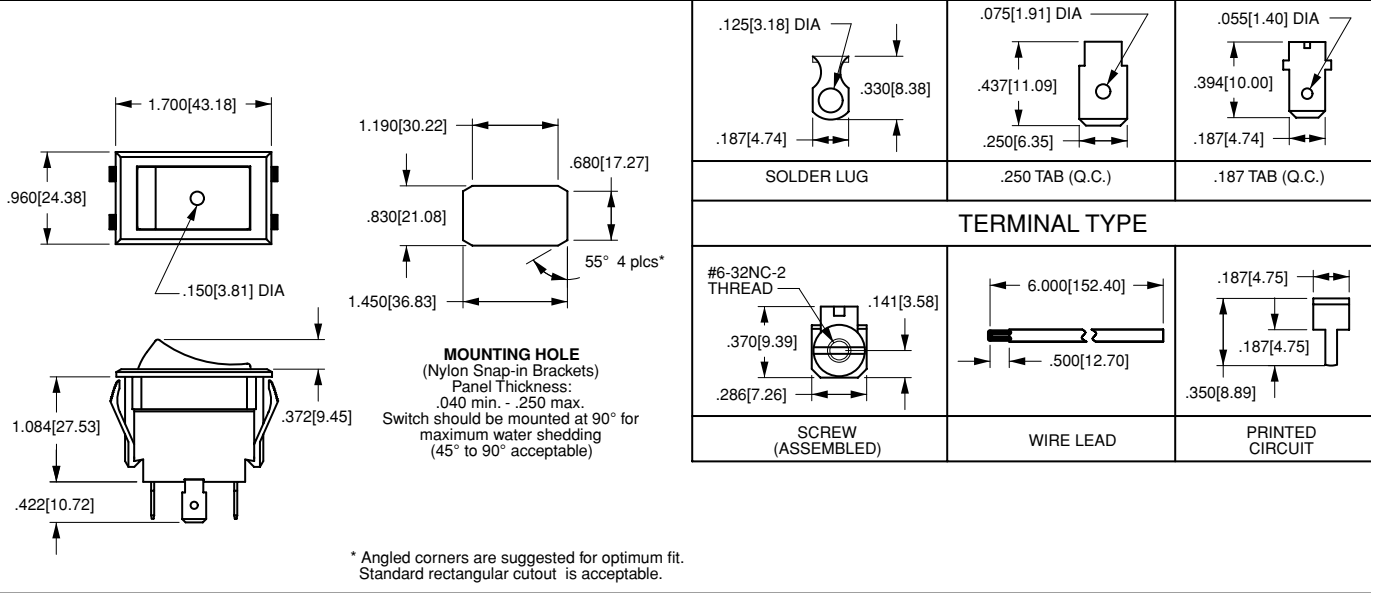


LS-Series Rocker Switches



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)



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/TERMINATION*

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 COLOR*

BL	black
WH	white

4 BASE COLOR*

BL	black
WH	white

5 LAMP VOLTAGE*

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

- NOTES
- 1 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.)
 - 2 Green and blue not recommended with 125 volt or 250 volt neon lamps.
 - 3 Additional terminations available. Consult factory.
 - 4 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

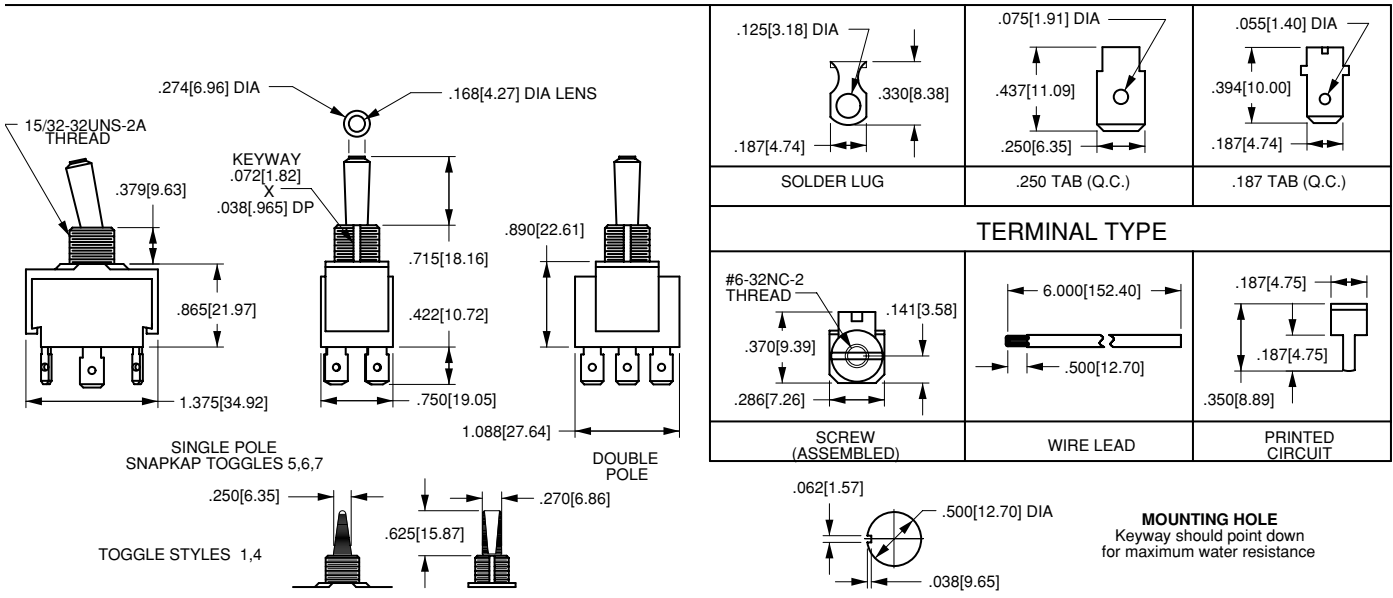
50,000 cycles- maintained
25,000 cycles- momentary

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/CIRCUITRY ³ /RATING/TERMINATION ⁵								3 LIGHTING SEQUENCE ^{3,4}			
10A 250VAC, 15A 125VAC, 3/4 HP 125-250VAC, 15A 15-28VDC								position 1	position 2	position 3	
Single Pole in Double Pole base				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	01 red	red	red
LT-1520	LT-1521	LT-1524	LT-1525	ON-NONE-(OFF)	LT-2520	LT-2521	LT-2524	LT-2525	02 amber	amber	amber
LT-1530	LT-1531	LT-1534	LT-1535	(ON)-NONE-OFF	LT-2530	LT-2531	LT-2534	LT-2535	03 green	green	green
LT-1540	LT-1541	LT-1544	LT-1545	ON-NONE-ON	LT-2540	LT-2541	LT-2544	LT-2545	10 red	---	none
LT-1550	LT-1551	LT-1554	LT-1555	ON-NONE-(ON)	LT-2550	LT-2551	LT-2554	LT-2555	11 red	clear	red
LT-1560	LT-1561	LT-1564	LT-1565	ON-OFF-ON	LT-2560	LT-2561	LT-2564	LT-2565	12 red	clear	amber
LT-1570	LT-1571	LT-1574	LT-1575	ON-OFF-(ON)	LT-2570	LT-2571	LT-2574	LT-2575	13 red	clear	green
LT-1580	LT-1581	LT-1584	LT-1585	(ON)-OFF-(ON)	LT-2580	LT-2581	LT-2584	LT-2585	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

2 ACTUATOR STYLE			snapkap style ²		
paddle ¹					
1	clear paddle		5	bright chrome	
4	solid color paddle		6	sat in chrome	
			7	black molded	

NOTES

- Solid color paddle available with lighting sequence 01, 02, 10 or 20.
- SnapKap Toggle Lenses are available separately. Consult factory.
- 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 for details.
- () Indicates momentary function.

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

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

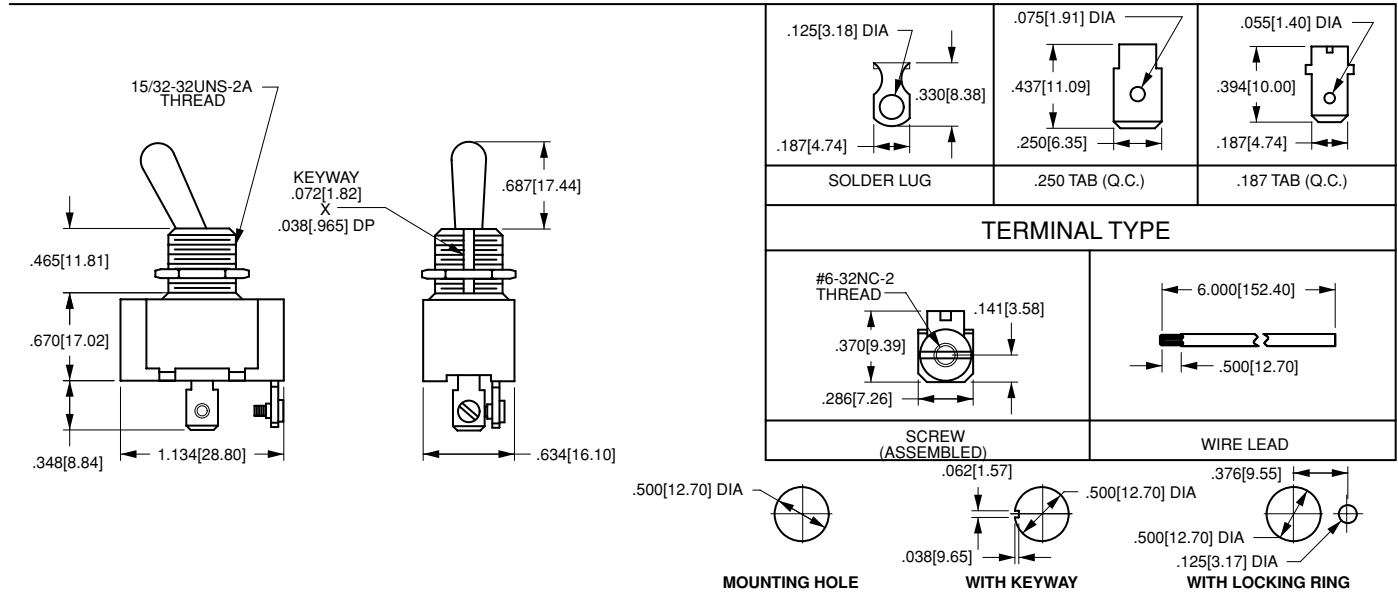
50,000 cycles- maintained
25,000 cycles- momentary

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/TERMINATION'
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)	6FC57	6FC57-.../TABS	6FC58
(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	0.687	0.465
E3	E8	2.000	0.465

3 TAB TERMINALS

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

NOTES
 1 Consult factory for .187 tab, wire lead and combination screw/tab/solder lug termination callouts.
 2 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

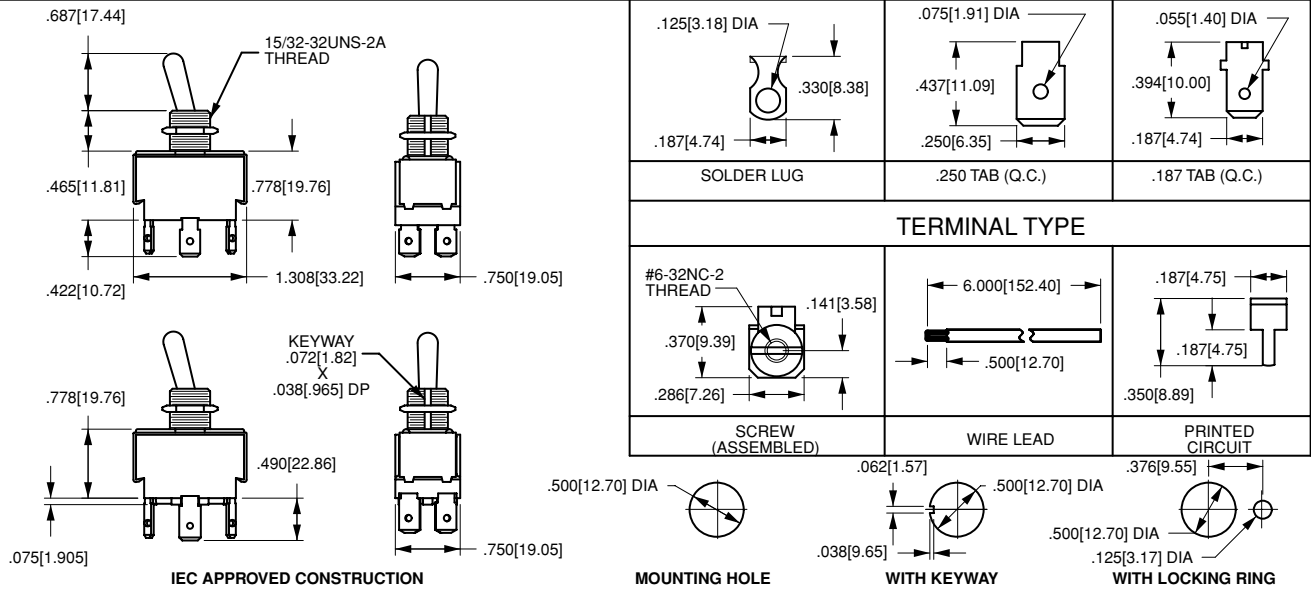
50,000 cycles- maintained
 25,000 cycles- momentary

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				Double Pole		
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 Approved ⁴						
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

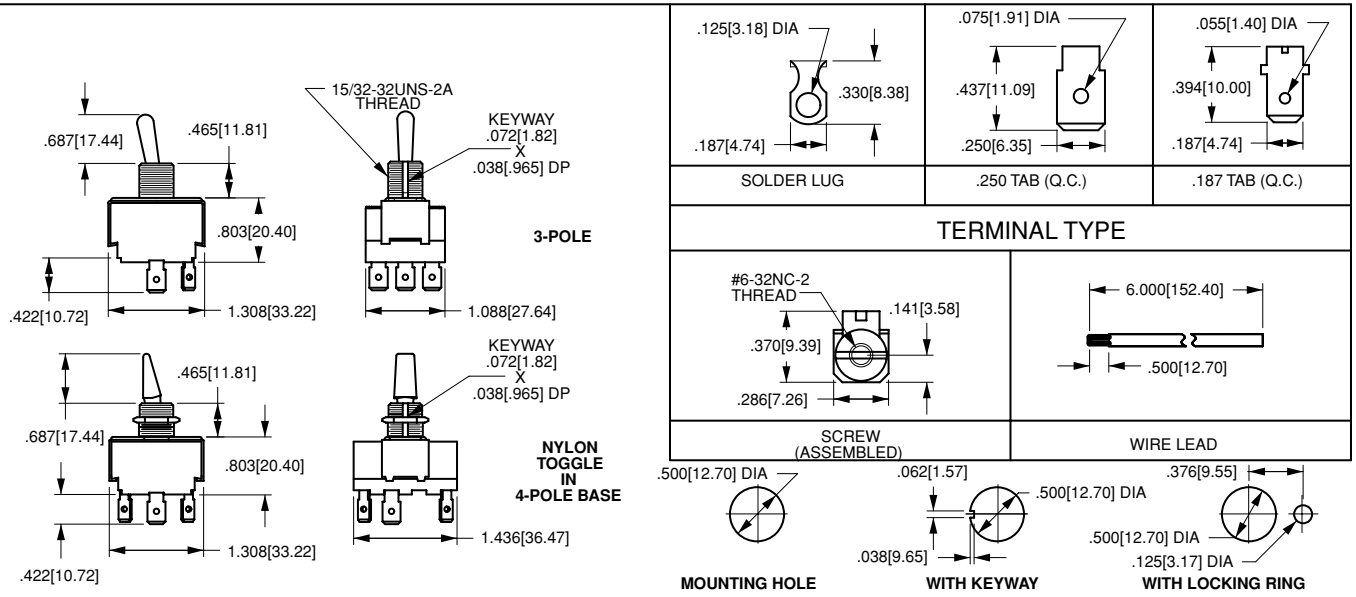
50,000 cycles- maintained
25,000 cycles- momentary

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/TERMINATION²

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

Three Pole				Four Pole			
solder lug	.250 tab	screw term.	wire leads	solder lug	.250 tab	screw term.	wire leads
HK250	HK251	HK254	HK255	IK250	IK251	IK254	IK255
HK25A	HK25B	HK25E	HK25F	IK25A	IK25B	IK25E	IK25F
HK25L	HK25M	HK25S	HK25S	IK25L	IK25M	IK25S	IK25T
HL250	HL251	HL254	HL25E	IL250	IL251	IL254	IL25J
HL25A	HL25B	HL25E	HL25F	IL25A	IL25B	IL25E	IL25F
HM250	HM251	HM254	HM255	IM250	IM251	IM254	IM255
HM25A	HM25B	HM25E	HM25F	IM25A	IM25B	IM25E	IM25F
HM25L	HM25M	HM25S	HM25T	IM25L	IM25M	IM25S	IM25S

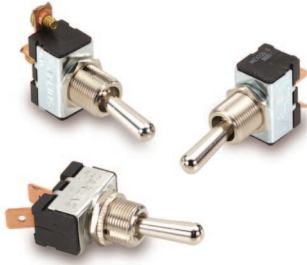
Additional ratings up to 17A 125VAC, 12A 250VAC, 1HP 125VAC, 1 1/2 HP 250 VAC and special circuits available. Consult factory for specifics.

2 ACTUATOR STYLE¹

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

NOTES
 1 Additional actuator options available. Consult factory for details.
 2 Consult factory for .187 tab and combination screw/tab/solder lug termination callouts.
 3 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

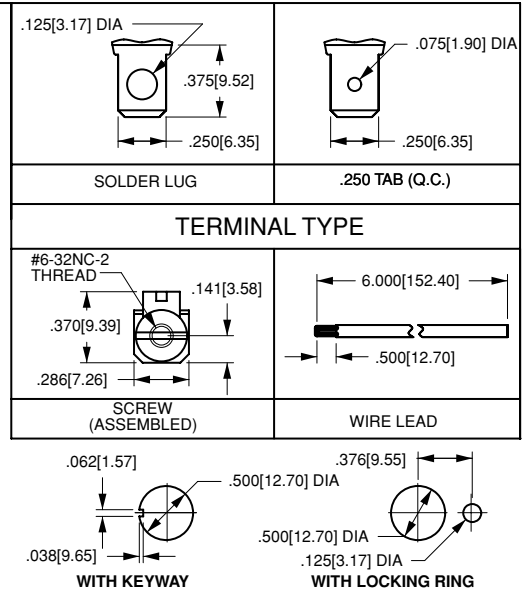
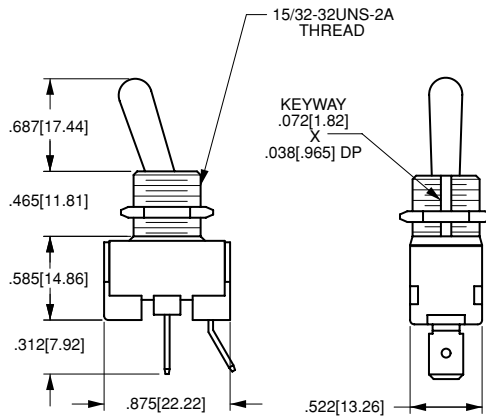
25,000 cycles

Mechanical Life

100,000 cycles

Operating Temperature

32°F to 185°F (0°C to +85°C)



CA201 - 73

¹ Base Part Number

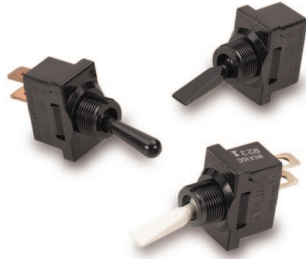
² Actuator Style

1 BASE PART NUMBER: SERIES/POLES/CIRCUITRY/RATING/TERMINATION				
<i>Single Pole</i>				
10A 250VAC, 20A 125VAC, 1 1/2 HP 125-250VAC				
	<i>solder lug</i>	<i>.250 tab</i>	<i>screw term.</i>	<i>wire leads</i>
ON-NONE-OFF	CA200	CA201	CA204	CA205
ON-NONE-ON	CB200	CB201	CB204	CB205

2 ACTUATOR STYLE ¹				
BAT	<i>unsealed</i>	<i>sealed</i>	<i>toggle length</i>	<i>bushing length</i>
	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

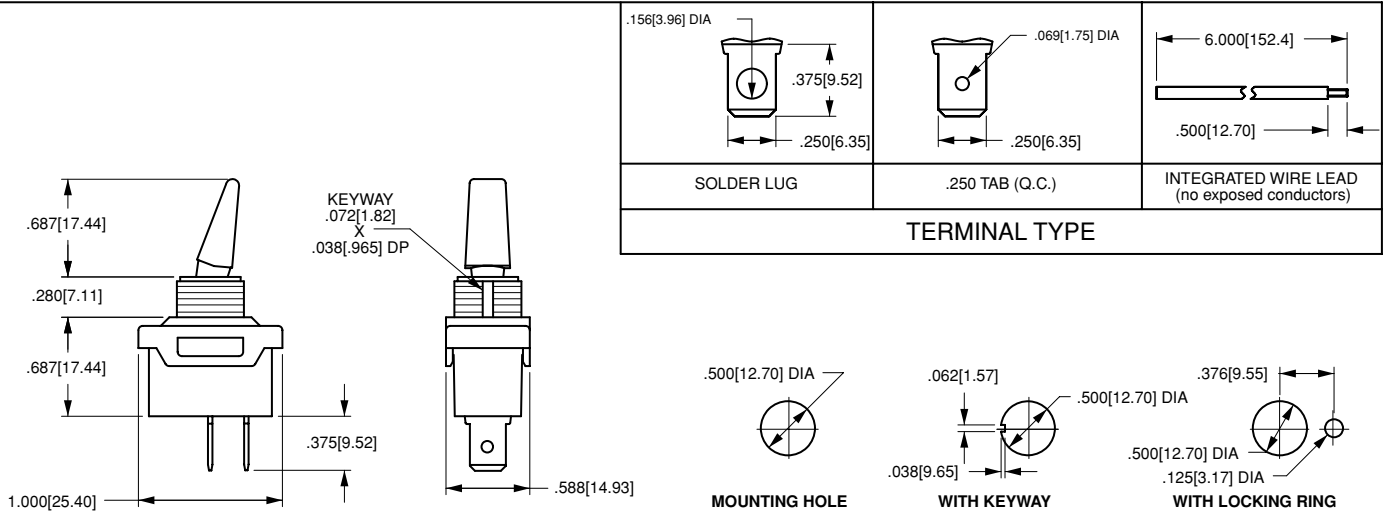
50,000 cycles

Mechanical Life

100,000 cycles

Operating Temperature

32°F to 185°F (0°C to 85°C)



DA221 - P - B - B

1 Base Part Number

2 Actuator Style

3 Actuator Color

4 Bushing Color

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

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

	solder lug	.250 tab	wire 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_U 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

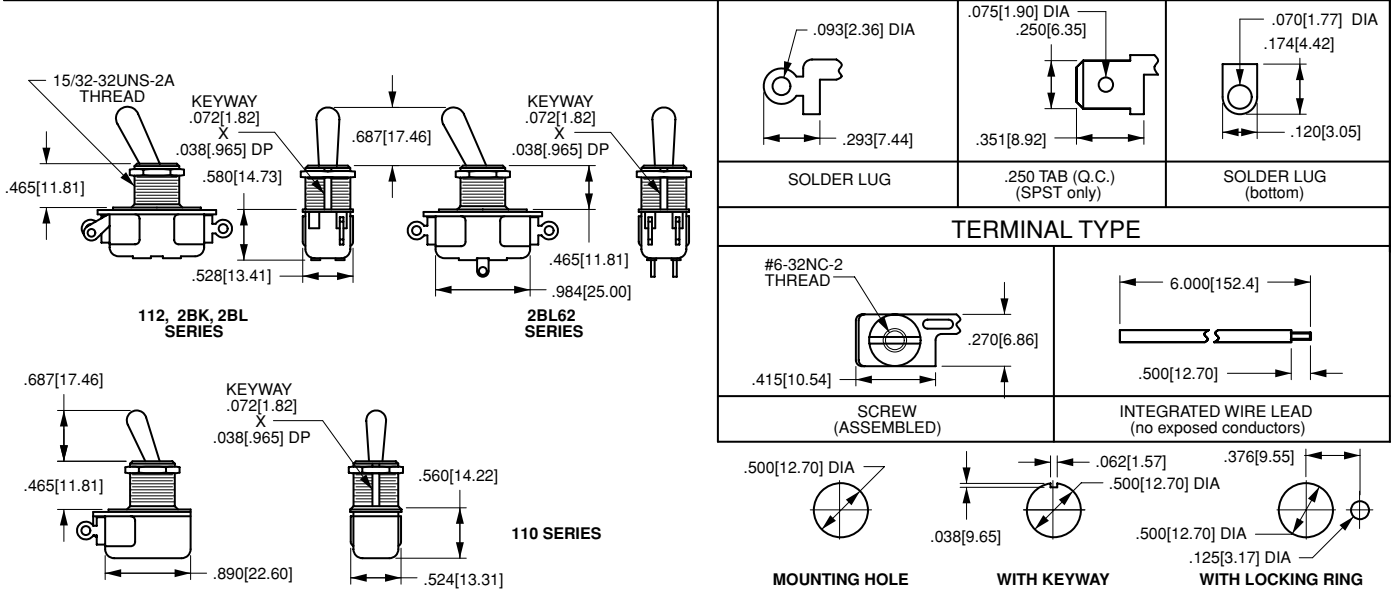
25,000 cycles

Mechanical Life

50,000 cycles

Operating Temperature

0°F to 150°F (-17.8°C to +65.6°C)



1 BASE PART NUMBER: SERIES/CIRCUITRY ¹ /RATING/TERMINATION ²				
	solder lug (end)	solder lug (bottom)	screw terminals	wire leads
3A 250V, 6A 125V, AC/DC				
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

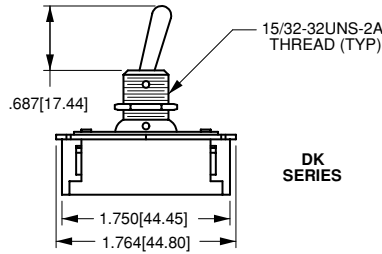
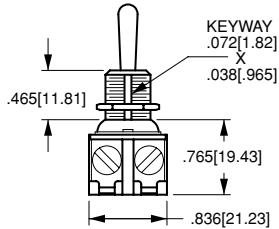
NOTES
 1 Momentary function only available with 73 toggles.
 2 160H and 110-Series are available with .250 tab terminals. Add suffix /TABS to end of part number. ex. 110-73/TABS
 () Indicates momentary function.

DK/EK-Series Heavy Duty Toggle Switches

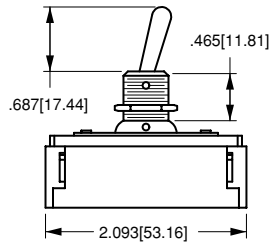
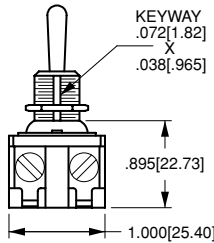


The switch that can handle your heavy duty requirements. Single or double pole with wire lead or screw terminations, and ratings to 20A 125V 10A 250V, the ac/dc DK/EK-Series is the most heavy duty toggle switch in the Carling line. Its sturdy metal construction and stiff actuation force will withstand 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)



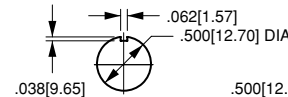
DK SERIES



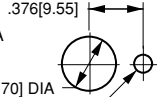
EK SERIES



MOUNTING HOLE



WITH KEYWAY



WITH LOCKING RING

WIRE LEAD	SCREW (ASSEMBLED)
TERMINAL TYPE	

DK284 - 73

¹ Base Part Number

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

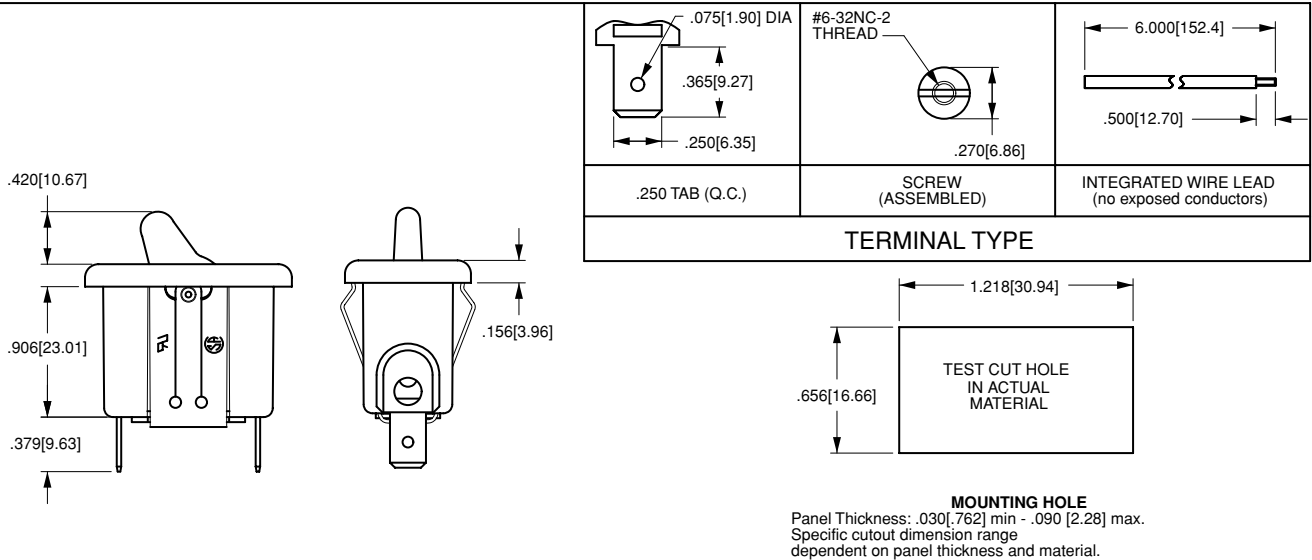
¹ Additional toggle lengths available. Consult factory for details.

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)



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 LEGEND*
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

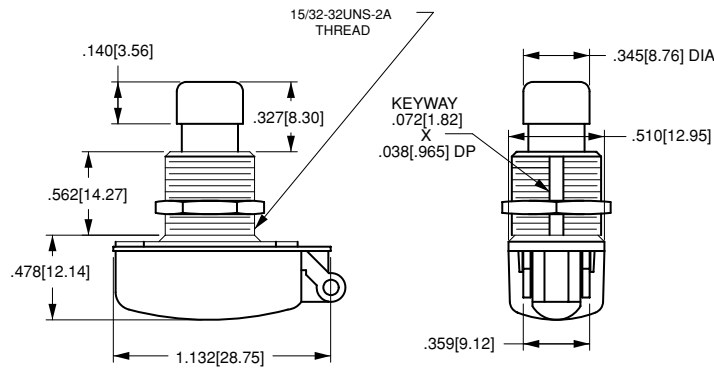
25,000 cycles

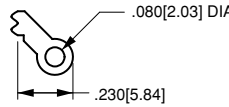
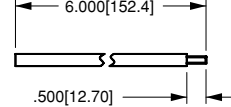
Mechanical Life

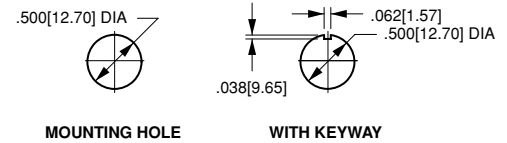
100,000 cycles

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	solder lug	wire leads
3A 125VAC		
OFF - (ON)	16-3POFF	16-3APOFF
OFF - (ON) with overtravel ¹	16-3POFF-OV	16-3APOFF-OV
ON - OFF	16-3PON	16-3APON
1A 125VAC		
ON - ON	116-P	116-AP
ON - ON with overtravel ¹	116-P-OV	116-AP-OV
1 ON - 1 OFF (2 circuit)	516-P	516-AP
1 ON - 1 OFF with overtravel ¹ (2 circuit)	516-P-OV	516-AP-OV

2 BUSHING STYLE

2	.312 length
4	.562 length

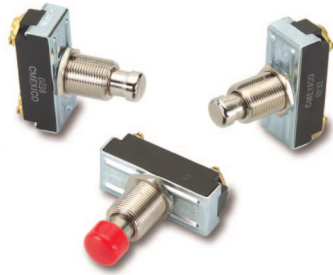
3 ACTUATOR STYLE²

CBL black plastic color cap
CRD red plastic color cap

NOTES

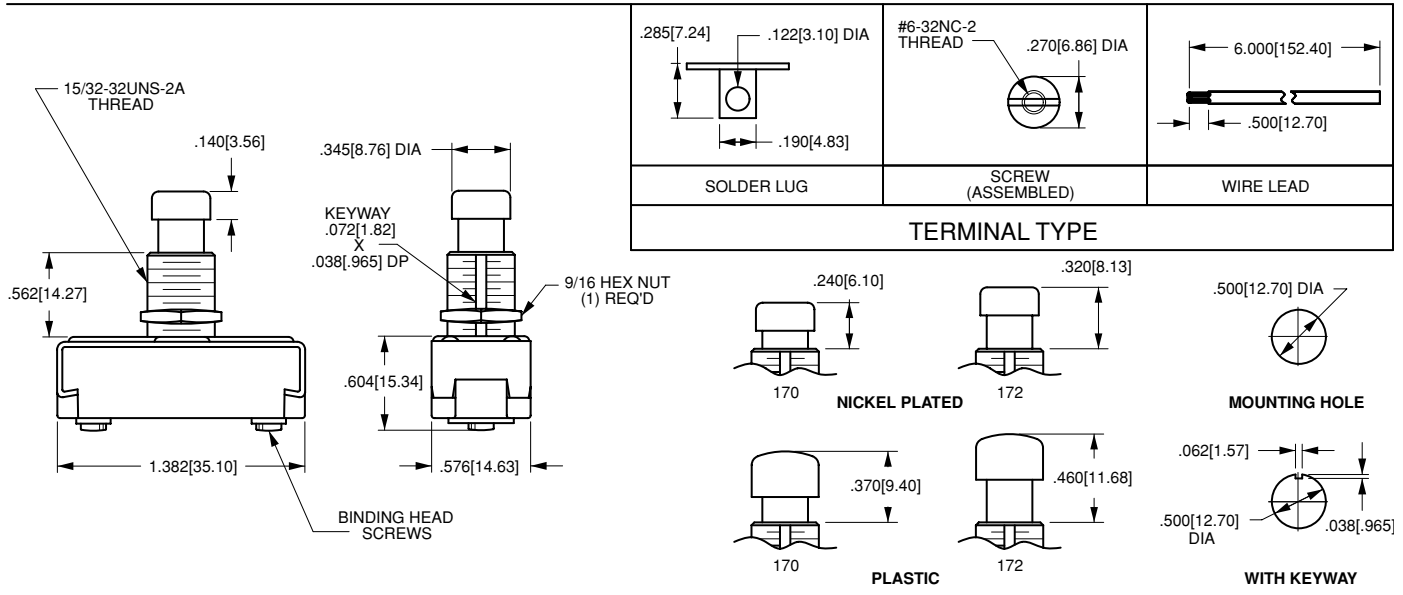
- ¹ Overtravel only available with #4 bushing.
- ² When selection 3 is left blank, a standard nickel plated plunger is supplied.
- () Indicates momentary function.

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 - CBL

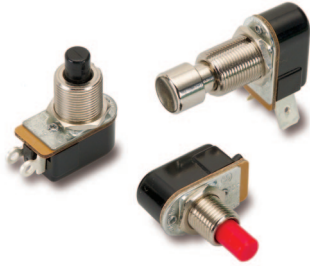
¹ Base Part Number ² Cap Style/Color

1 BASE PART NUMBER: SERIES/POLES/CIRCUITRY/RATING/TERMINATION			
<i>Single Pole</i>			
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

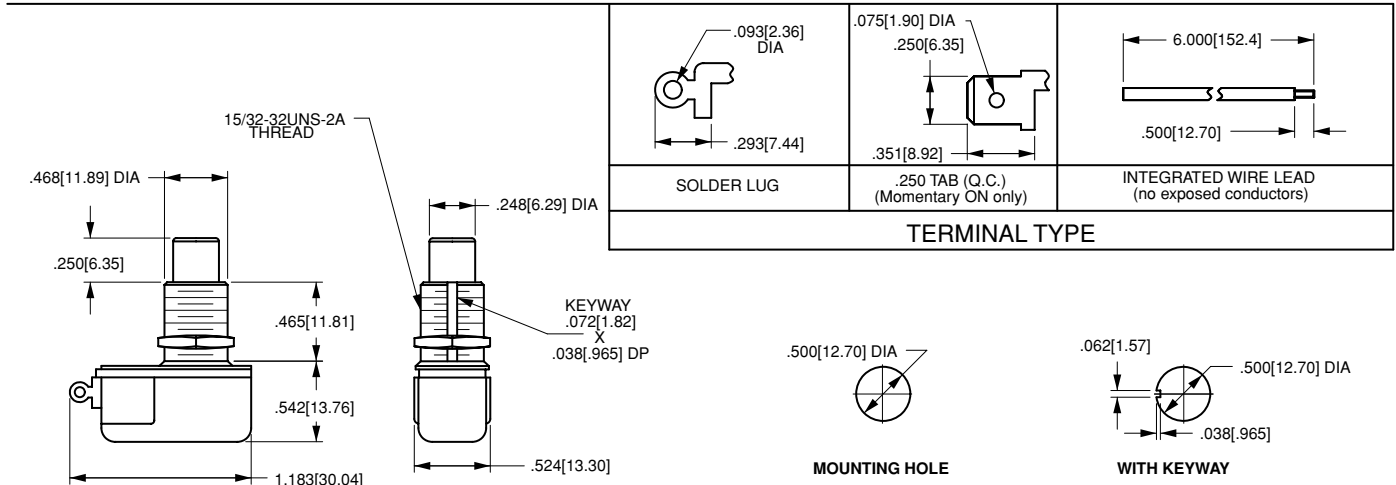
25,000 cycles

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/RATING ¹ /TERMINATION				2 BUSHING STYLE		3 BUTTON STYLE/COLOR	
<i>Single Pole</i>	<i>solder lug</i>	<i>.250 tab</i>	<i>wire leads</i>	<i>length</i>	<i>diameter</i>	BL	black nylon
3A 250VAC, 6A 125 VAC, 3/4A 125V	P26A	P26B	P26F	1A	.406	RD	red nylon
OFF - (ON)	P26L	-	P26T	1B	.406	RND MTL ²	round metal
ON - (OFF)				1C	.465	CON MTL ²	concave metal
3A 277VAC, 6A 125 VAC	P267A	P267B	P267F	1D	.465		
OFF - (ON)	P267L	-	P267T				
ON - (OFF)							

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

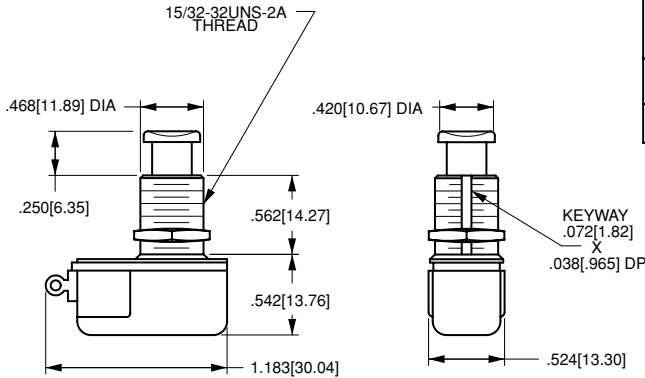
25,000 cycles

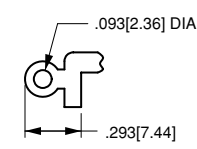
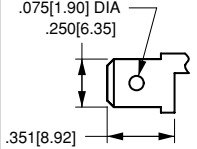
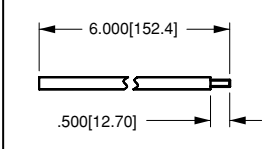
Mechanical Life

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 - **BL**

1 Base Part Number 3 Button Color

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

Single Pole solder lug .250 tab wire leads
3A 250VAC, 6A 125 VAC, 3/4A 125V
OFF - (ON) P27A P27B P27F
ON - (OFF) P27L - P27T

3 CONCAVE NYLON BUTTON COLOR

BL black
RD red
WH 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

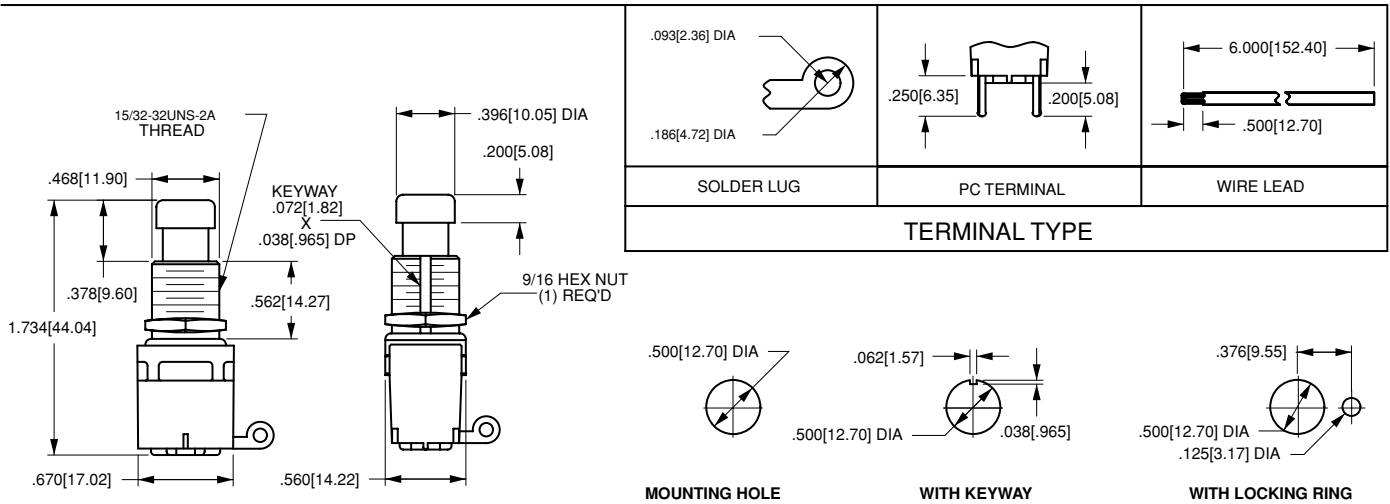
25,000 cycles

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				Double Pole				
2A 250VAC, 5A 125VAC								
solder lug	PC term.	wire leads.		solder lug	PC term.	wire leads.		
64111210	64111212	64111215	ON-OFF	64112210	64112212	64112215		
64111220	64111222	64111225	ON-ON	64112220	64112222	64112225		

110-Series Pushbutton Switches



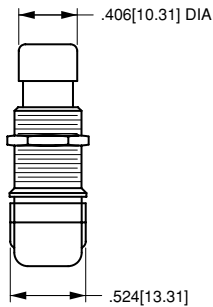
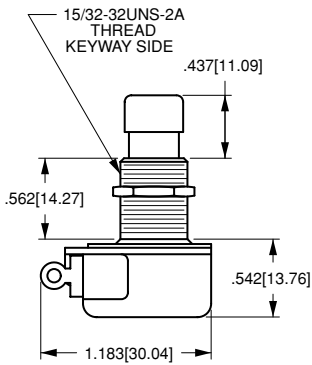
The 110-Series provides a compact yet rugged solution to general purpose switch needs. Alternate action, metal construction and stiff (6-8lb.) actuation force have combined to make this switch a pillar in the Music Industry and Audiovisual Markets. This versatile switch is available in maintained and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

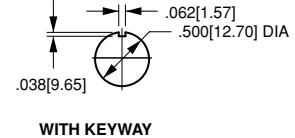
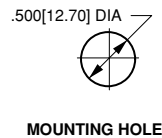
Mechanical Life
 100,000 cycles

Operating Temperature
 32°F to 185°F (0°C to 85°C)



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

SOLDER LUG	.250 TAB (Q.C.) (SPST only)	SOLDER LUG (bottom)
TERMINAL TYPE		
END TERMINAL	SCREW (ASSEMBLED) (SPST ONLY)	INTEGRATED WIRE LEAD (no exposed conductors)



110-P

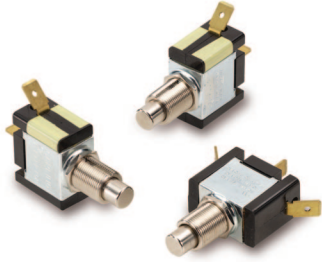
¹
 Part Number

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

	<i>solder lug (end)</i>	<i>solder lug (bottom)</i>	<i>screw terminals</i>	<i>wire leads</i>
Single Pole				
3A 250V, 6A 125V				
OFF-ON	110-P	110-BP	110-SP	111-16-P
OFF-(ON)	110-PM-OFF	110-PBM-OFF	110-SPM-OFF	111-PM-OFF
ON-(OFF)	110-PM-ON	110-PBM-ON	110-SPM-ON	111-PM-ON
5A 250V, 10A 125V, 1/4 HP 125V				
OFF-ON	160H-P	160H-BP	160H-SP	160H-AP
1A 250V, 3A 125V				
ON-ON	112-P	-	-	112-PA
ON-(ON)	112-PM	-	-	112-PAM
Double Pole				
1A 250V, 3A 125V				
OFF-ON	216-PP	-	-	216-PPA
OFF-(ON)	216-PM-OFF	-	-	216-PAM-OFF
ON-(OFF)	216-PM-ON	-	-	216-PAM-ON
ON-ON	316-PP	316-B-PP	-	316-PPA
ON-(ON)	316-PM	316-B-PM	-	316-PAM
1 ON - 1 OFF (2 circuit)	516-PP	-	-	516-PPA
1 (ON) - 1 (OFF) (2 circuit)	516-PM	-	-	516-PAM

NOTES
 () Indicates momentary function.

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

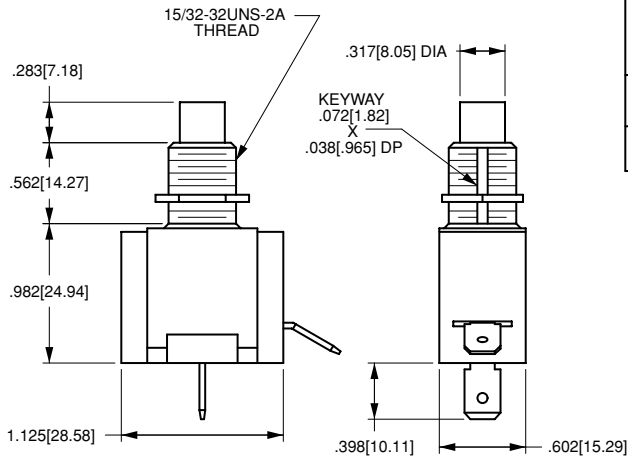
50,000 cycles

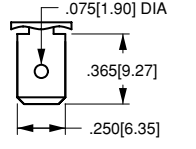
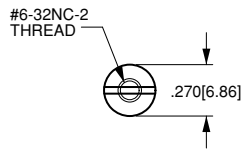
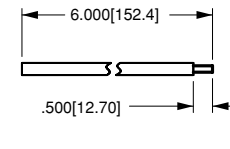
Mechanical Life

100,000 cycles

Operating Temperature

0°F to 85°F (32°C to 85°C)

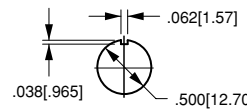


		
.250 TAB (Q.C.)	SCREW (ASSEMBLED)	INTEGRATED WIRE LEAD (no exposed conductors)
TERMINAL TYPE		

.500[12.70] DIA



MOUNTING HOLE



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



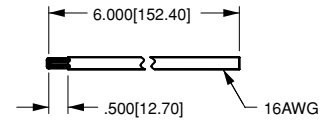
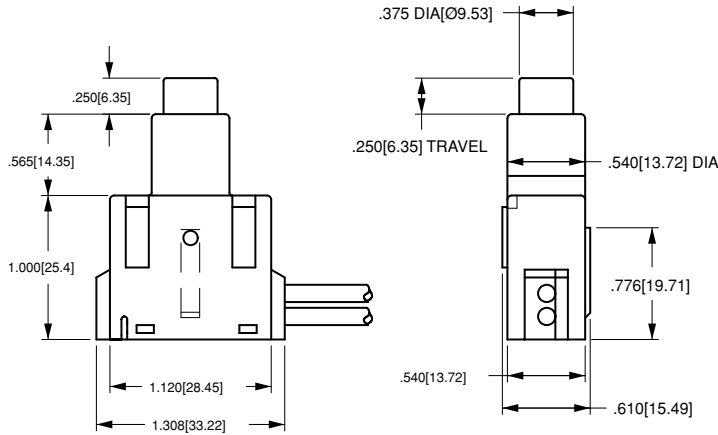
The new PP-Series plastic pushbutton switches are heavy-duty, single pole switches with wire leads. They are alternate action, available in single throw construction, with AC ratings up to 15 amps. Both bushing and bracket are made out of nylon. These high current switches are popular with in the Appliance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

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

Electrical Life
50,000 cycles

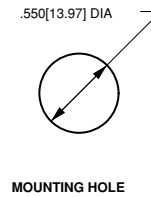
Mechanical Life
100,000 cycles

Operating Temperature
32°F to 185°F (0°C to 85°C)

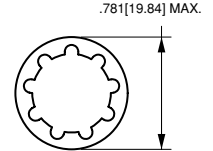


INTEGRATED WIRE LEAD
(NO EXPOSED CONDUCTORS)

TERMINAL TYPE



MOUNTING HOLE



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	<i>screw terminals</i>
ON-OFF	PPA525-AC
10A 250VAC, 15A 125VAC	
ON-OFF	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

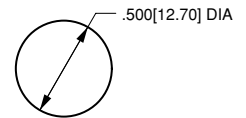
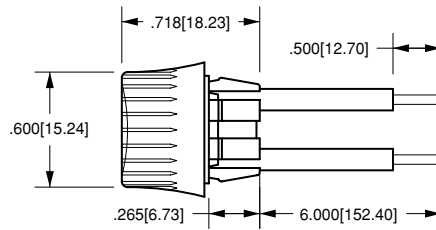
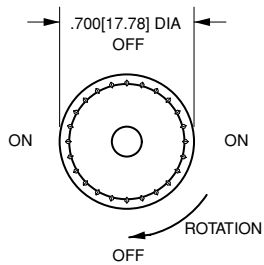
100,000 cycles

Mechanical Life

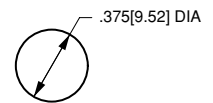
100,000 cycles

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	Wire Leads
OFF-ON repeating	nylon snap-in bezel	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.

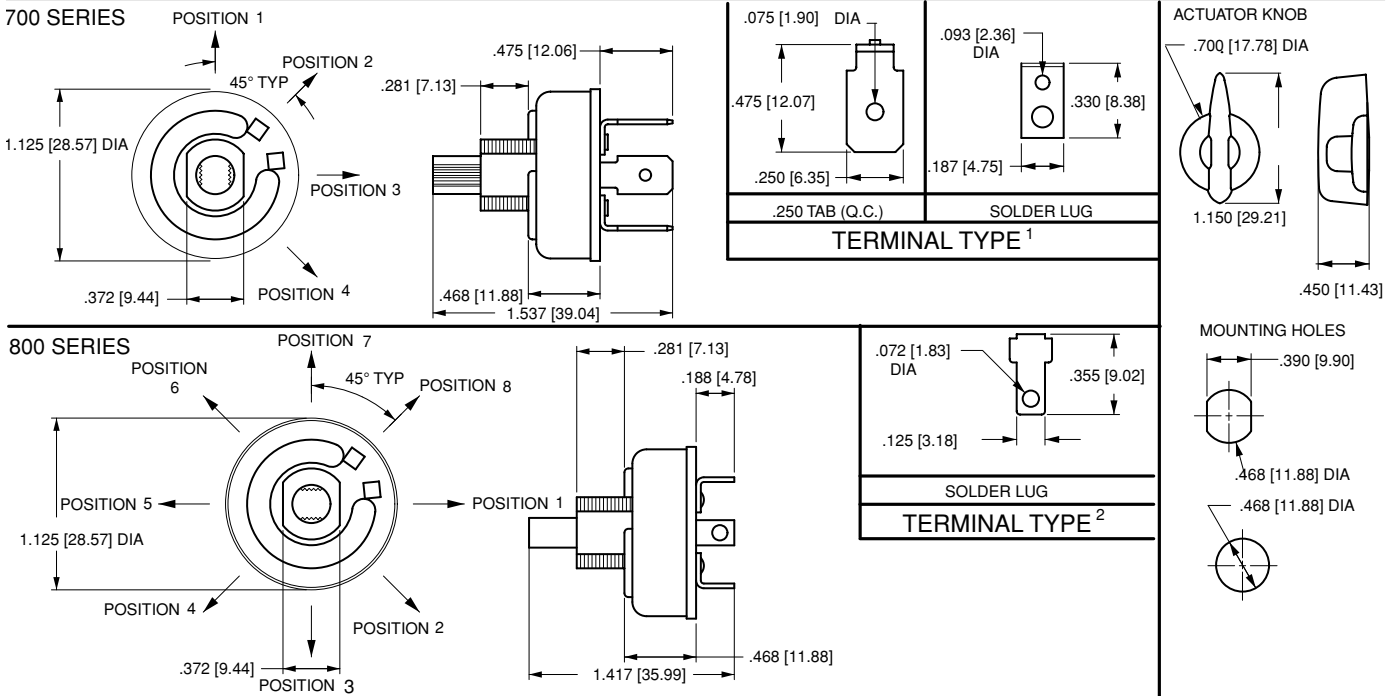
¹ Custom colors available. Consult factory.

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



700-1A - BL

¹ Base Part Number ² Actuator Color

1 BASE PART NUMBER: SERIES/POLES/CIRCUITRY/RATING¹/TERMINATION²

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
1 700-2 and 700-2A feature 8 detent positions.
2 800-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

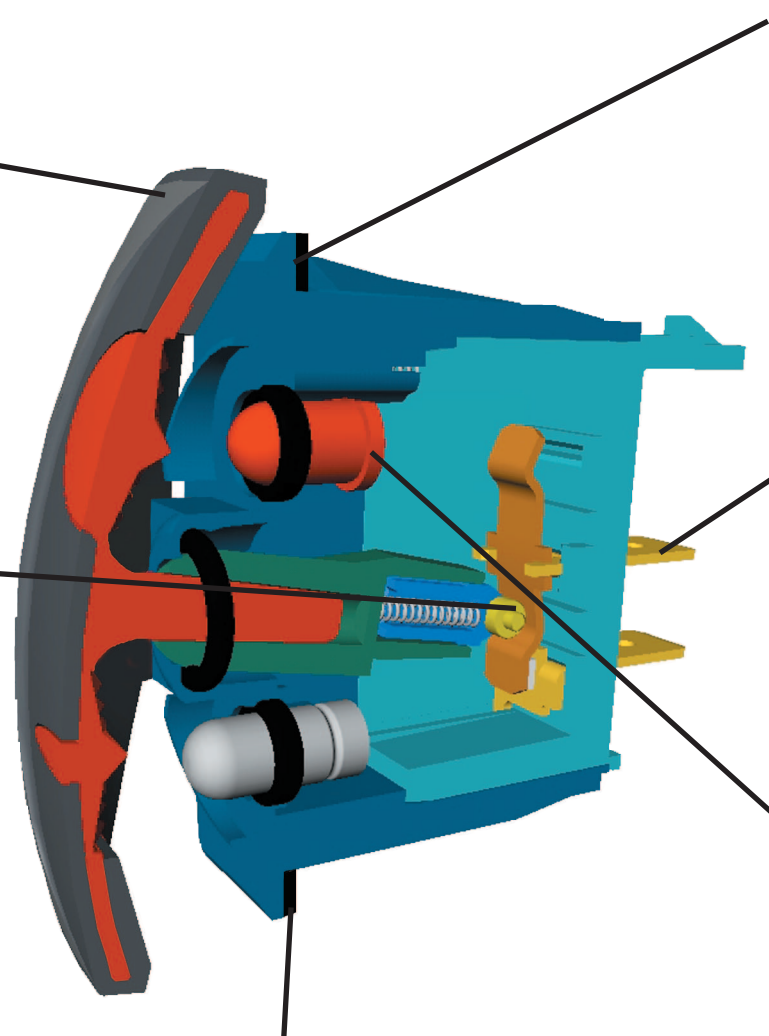
Offered in both eight and ten terminal base options. AMP & Packard compatible connectors available.

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

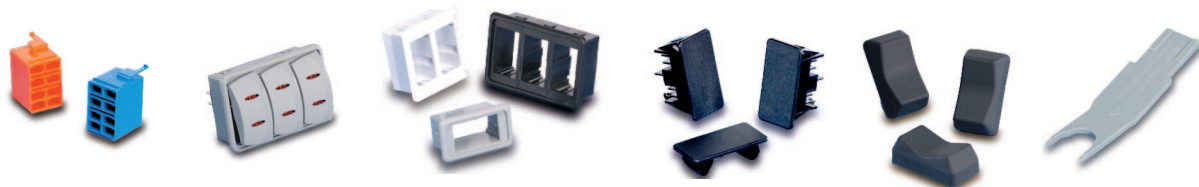
The Contura XII version incorporates a paddle style handle on the raised bracket/bezel, also used in the Contura X and XI switch. The contoured handle design provides intuitive recognition and ease of operation for a variety of transportation related applications, and is available with all Contura X 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 Rating	.4VA @ 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 125C 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



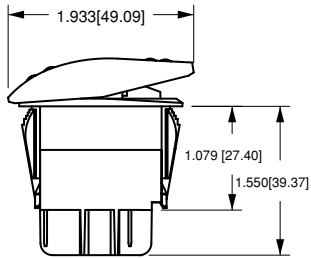
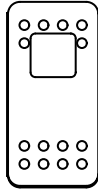
Environmental

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]

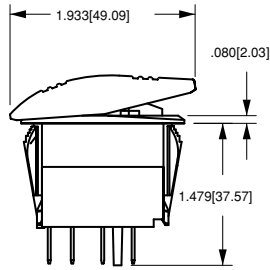
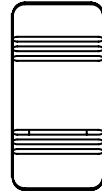
CONTURA II STYLE

SHOWN WITH SQUARE LENS



8 TERMINAL BASE W/BARRIERS

CONTURA III STYLE

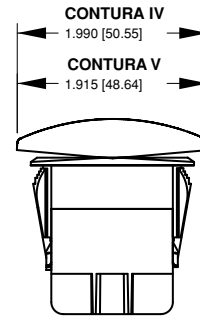
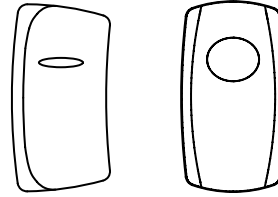


8 TERMINAL BASE W/O BARRIERS

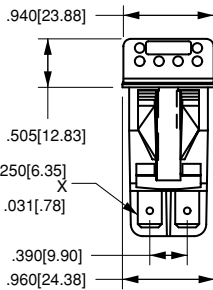
CONTURA IV & V STYLE

IV - SHOWN WITH BAR LENS

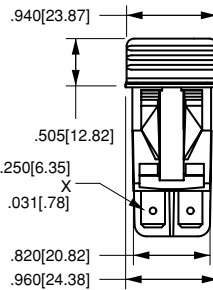
V - SHOWN WITH ROUND LENS



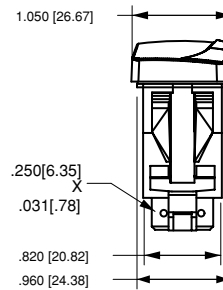
10 TERMINAL BASE W/BARRIERS



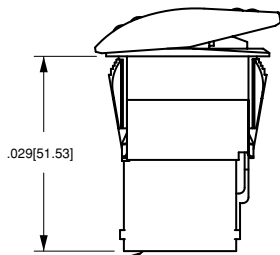
8 TERMINAL BASE W/BARRIERS



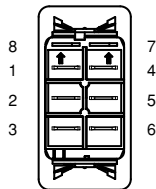
10 TERMINAL BASE W/O BARRIERS



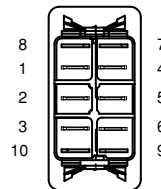
10 TERMINAL BASE W/O BARRIERS



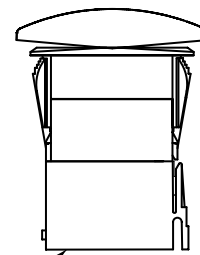
SWITCH SHOWN WITH VCH CONNECTOR 8 TERMINAL



BOTTOM VIEW TERMINAL ARRANGEMENT 8 TERMINAL BASE



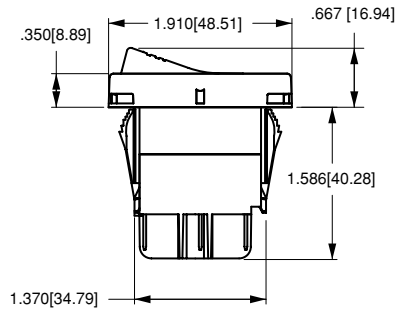
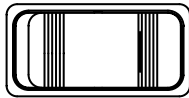
BOTTOM VIEW TERMINAL ARRANGEMENT 10 TERMINAL BASE



SWITCH SHOWN WITH VC1 CONNECTOR 10 TERMINAL

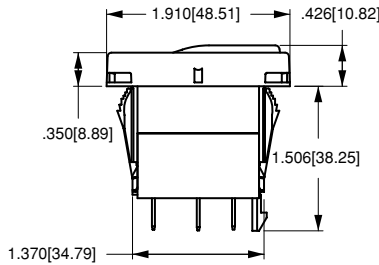
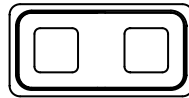
Dimensional Specifications: in. [mm]

CONTURA X STYLE
SHOWN WITH RAISED BRACKET



8 TERMINAL BASE W/BARRIERS

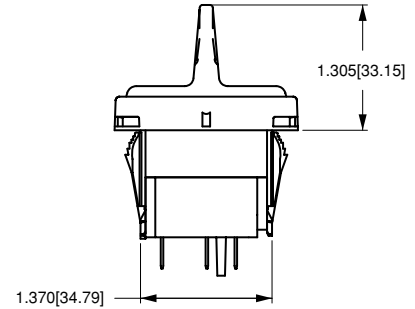
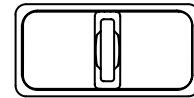
CONTURA XI STYLE
SHOWN WITH RAISED BRACKET AND TWO SQUARE LENSES



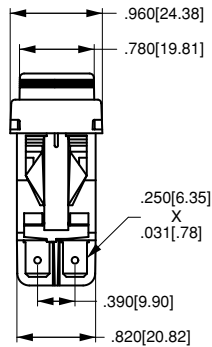
10 TERMINAL BASE W/O BARRIERS

CONTURA XII STYLE

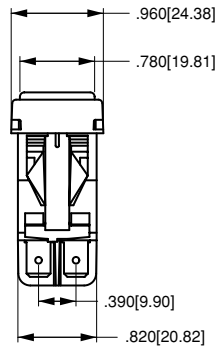
SHOWN WITH PADDLE ACTUATOR



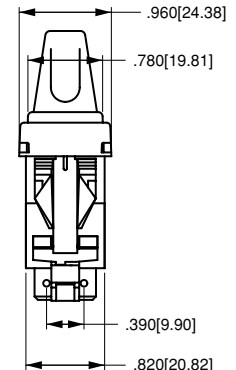
8 TERMINAL BASE W/O BARRIERS



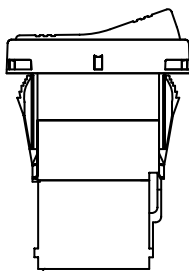
8 TERMINAL BASE W/BARRIERS



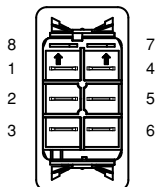
10 TERMINAL BASE W/BARRIERS



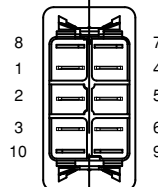
10 TERMINAL BASE W/O BARRIERS



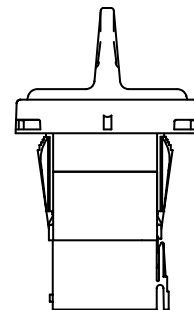
SWITCH SHOWN WITH VCH CONNECTOR
8 TERMINAL



BOTTOM VIEW TERMINAL ARRANGEMENT 8 TERMINAL BASE



BOTTOM VIEW TERMINAL ARRANGEMENT 10 TERMINAL BASE



SWITCH SHOWN WITH VC1 CONNECTOR
10 TERMINAL

V 1 D A B T O B - A R B 00 - 0 00

1 Series 2 Circuit 3 Rating 4 Termination Illumination 5 Lamp 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:

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

SPECIAL CIRCUITS

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

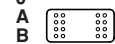



5 ILLUMINATION & SWITCH SEALING
Lamp #1: above terminals 1 & 4 end of switch.; Lamp #2 above terminals 3 & 6 end of switch.
Positive (+) and negative (-) symbols apply to LED lamps only

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	Z	# 2	Up	3+ 6-
U	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-
P	V	& # 2	Down	1+ 4-
		# 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 A Red L Amber F Green R Red
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 COLOR¹, PANEL SEAL



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

9 ACTUATOR
No Actuator 0
Contura II A 
Contura III B 
C 
D 

Actuator orientation above terminals: 3,6 1,4

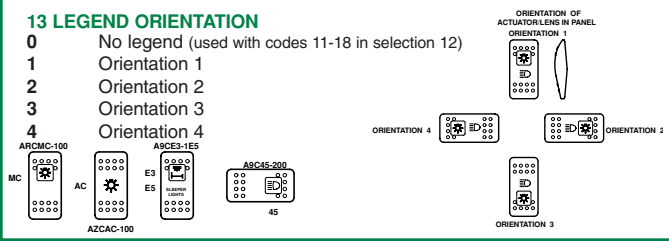
10 LENS⁴
Lens color for LEDs must be clear, white, or match color of LED. Green or blue lenses are not recommended with Neon lamps.
0 - No Actuator Z - No Lens
Clear White Amber Green Red Blue
1 6 B G M T 
2 7 C H N U 
3 8 D J P V 
Square lens options available only for Contura III:
4 9 E K R W 
5 A F L S Y 

11 ACTUATOR COLOR¹ AND TEXTURE
0 - No Actuator
Soft Surface Black Gray Red White
Hard Surface B G R W
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 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



ARCMEC-100 AC ARCE3-1E5 ARCE5-200
MC ES ES ES
AZCAC-100 45

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 () - momentary from bottom of switch:

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

Position:

SP	DP	2 & 3, 5 & 6	Connected Terminals	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

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

Contura II	Black A	Gray B	Red G	White H
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 3	White 8	Amber D	Green J	Red P	Blue V
----------------	----------------	----------------	----------------	--------------	---------------

11 ACTUATOR LOCK FUNCTION AND COLOR*

Lock Color	Up A	Down H	Up & Down R	Center ³ 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 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 Illumination Lamp 5 Lamp 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:	1	2	3
SP	2 & 3, 5 & 6	Connected Terminals	1 & 2, 4 & 5
1	ON	NONE	OFF
2	A	(ON)	NONE
3	C	ON	NONE
4	D	ON	NONE
5	F	ON	NONE
6	J	ON	OFF
7	K	ON	OFF
8	L	(ON)	OFF

SPECIAL CIRCUITS

	2 & 3	2 & 3, 5 & 6	2 & 3, 5 & 6 & 8	2 & 3, 5 & 6 & 8 & 9	5 & 6
H*	2 & 3	2 & 3	2 & 3	2 & 3	5 & 4
G*	2 & 3	2 & 3	2 & 3	2 & 3	OFF
S	2 & 3	2 & 3	2 & 3	2 & 3	1 & 2
M*	(2 & 3, 5 & 6)	2 & 3	2 & 3	2 & 3	OFF
R	(2 & 3, 5 & 6)	2 & 3	2 & 3	2 & 3	1 & 2
E*	5 & 6	5 & 6	5 & 6	5 & 6	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^{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	F	Wire Leads no barriers	No
E	6	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	Independent	8+ 7-
A	1	# 1	Down	8+ 7-
B	2	# 2	Up	8+ 7-
C	3	# 1	Down	8+ 7-
D	4	# 2	Up	8+ 7-
E	5	# 1	Down	1+ 7-
F	6	# 2	Up	1+ 7-
G	7	# 1	Independent	8+ 7-
H	Z	# 2	Up	8+ 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	# 2	Independent	8+ 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	8+ 6-
N	T	# 1	Down	1+ 4-
		# 2	Down	1+ 4-
P	V	# 1	Up	8+ 6-
U	Y	# 2	Up	8+ 7-
		# 1	Independent	10+ 9-
		# 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 A Red L Amber F Green R Red
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 COLOR¹, PANEL SEAL

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

9 ACTUATOR

No Actuator	0
Contura IV, left orientation	E
Contura IV, left orientation, laser etched	T
Contura IV, right orientation	F
Contura IV, right orientation, laser etched	R

Actuator orientation above terminals: 3,6 1,4



10 LENS

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


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

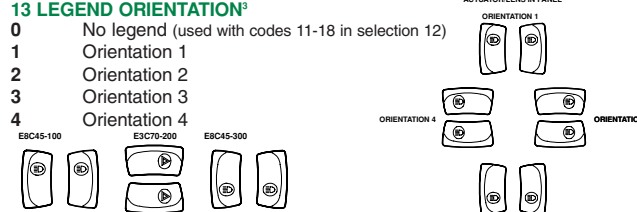
00 - No Legend this location/No actuator
11 ON 12 OFF 13 I 14 O
OFF ON O I



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 () - 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 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

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-

Selections for Double Pole Switches Only:
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*			superbright Green	superbright Red	
2VDC	A	L	F	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	White	Gray
One Seal	B	W	G
	C	Y	H

9 HARD SURFACE ACTUATOR

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



Actuator orientation above terminals: 3,6 1,4

10 LENS⁶
Z - No Lens

Clear	White	Amber	Green	Red	Blue
A	B	C	D	G	F
G	H	J	K	L	M

Bar lens 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.

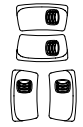
11 ACTUATOR LOCK FUNCTION AND COLOR⁷

Lock Color	Up	Down	Up & Down	Center ⁸
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

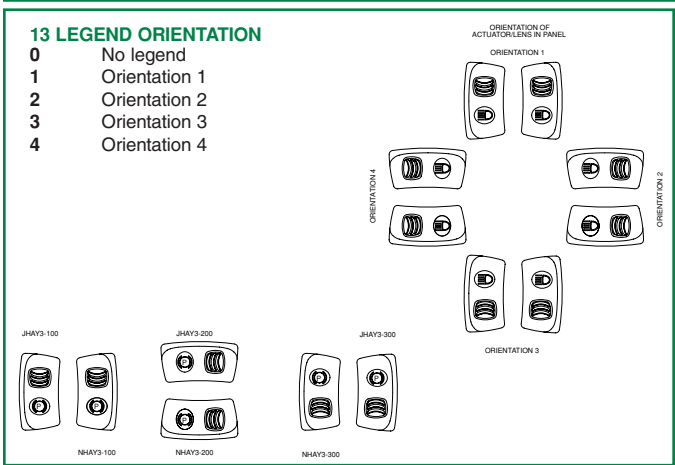
12 ACTUATOR LENS OR BODY LEGEND⁹

00 - No Legend

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



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



- NOTES**
Shading indicates standard configurations.
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 Only available with 3 position circuits. Center OFF and special circuits only available with center position lock function.
 - 4 Additional ratings available. See page 57.
 - 5 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 Illumination 5 Lamp 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	F	ON	NONE	(ON)
6	J	ON	OFF	ON
7	L	ON	OFF	(ON)
8	K	(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	OFF
S	2 & 3, 5 & 6	2 & 3	1 & 2
M*	(2 & 3, 5 & 6)	2 & 3	OFF
R	(2 & 3, 5 & 6)	2 & 3	1 & 2
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 8 - 9.

3 RATING^{1,5}

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	&# 2	Down	1+ 7-
F	6	# 1	Up	1+ 7-
G	7	&# 2	Up	3+ 7-
H	8	# 1	Independent	8+ 7-
U	Z	&# 2	Up	3+ 7-
U	Y	# 1	Independent	8+ 7-
U	Y	&# 2	Independent	10+ 9-

Selections for Single Pole Switches Only:
J # 1 Down 3+ 8-
K # 2 Independent 6+ 7-
W # 1 Independent 8+ 7-
2 Independent 6+ 7-

Selections for Double Pole Switches Only:
L # 1 Down 3+ 6-
M # 2 Up 3+ 6-
N # 1 Down 3+ 6-
T # 2 Down 1+ 4-
P # 1 Up 1+ 4-
V # 2 Up 3+ 6-
U # 1 Independent 8+ 7-
Y # 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 A Red L Amber F Green R Red
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	White	Gray
One Seal	B	W	G
	C	Y	H

9 ACTUATOR

No Actuator	0
Contura V	G
Contura V Laser Etch	P

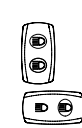
10 LENS
Lens color for LEDs must be clear, white, or match color of LED. Green or blue lenses are not recommended with Neon lamps. Lens style & location: #1 / #2

0 - No Actuator	Z - No Lens	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}

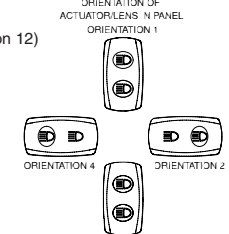
No Actuator	0	Black	C	Gray	H	Red	S
White	Y	Nickel	D	Pewter	E		

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



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 factor 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 Illumination 5 Lamp 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:	1	2	3
SP	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	F ON	NONE	(ON)
6	J ON	OFF	(ON)
7	K ON	OFF	(ON)
8	L (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	OFF
S	2 & 3, 5 & 6	2 & 3	1 & 2
M*	(2 & 3, 5 & 6)	2 & 3	OFF
R	(2 & 3, 5 & 6)	2 & 3	1 & 2
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 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	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	& # 2	Down	1+ 7-
F	6	# 1	Up	1+ 7-
G	7	& # 2	Up	3+ 7-
H	Z	# 1	Independent	8+ 7-
U	Y	# 2	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-
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-
P V & # 2 Down 1+ 4-
U Y # 1 Up 1+ 4-
& # 2 Up 3+ 6-
Independent 8+ 7-
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 A Red L Amber F Green R superbright
6VDC B C M G H S Red
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 COLOR¹, PANEL SEAL (external foam gasket)

# of gaskets	X & XI w/Flush Bracket	X, XI, XII w/Raised Bracket
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	Lens Style
Clear	White	Bar
3 8 D J K P V	Amber	One piece Square
4 9 E K R W	Green	Two piece Square*
5 A F L S Y	Red	(w/ clear top protective lens)
2 7 C H N U	Blue	Two piece Square*
1 6 B G M T		(w/ smoke top protective lens)
		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 LEGEND²

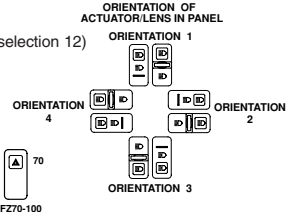
00	11	12	13	14
No Legend this location/No actuator	ON	OFF	I	O
15 O O	16 O O	17 O I	18 I O	
F N	N F	O	I	
21 F	22 F	23 O	24 I	
25 O	26 O	27 O	28 I	
F	N			

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

13 LEGEND 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 & 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.
1 Custom colors are available. Consult factory.
2 White imprinting is standard on black actuators; Black imprinting is standard on white, red & gray actuators. Custom colors are available, consult factory.
3 With 2 square lenses, use sel. 12 for lens above lamp 1, & selection 14 for lens above lamp 2.
4 Additional ratings available. See page 57.
5 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

() - 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	DP	2 & 3, 5 & 6	Connected Terminals
1	A	ON	1 & 2, 4 & 5
4	D	ON	NONE
6	J	ON	OFF
7	K	ON	ON
8	L	(ON)	OFF
9	N	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	OFF
S	2 & 3, 5 & 6	2 & 3	1 & 2
M*	(2 & 3, 5 & 6)	2 & 3	OFF
R*	(2 & 3, 5 & 6)	2 & 3	1 & 2
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, 8 & 9.

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	Actuator Lens position when illuminated	Lamp wired to Terminals
0	0	None	Up	3+ 7-
3	Z	#2	Independent	8+ 7-
Selections for Double Pole Switches Only:				
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 A Red L Amber F Green R Red
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 RAISED BRACKET COLOR¹, PANEL SEAL (external foam gasket)

No Gasket	Black	White	Gray
1	2	3	
One Gasket	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	Center ⁴
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	22	23	24
OFF	ON	O	I
25	26	27	28
O	O	O	I
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)

ORIENTATION OF ACTUATOR/LENS IN PANEL

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

ORIENTATION 1
ORIENTATION 4
ORIENTATION
ORIENTATION 5

MC 13DMC-1 4F 1PM4F-1 45 18K45-2

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.

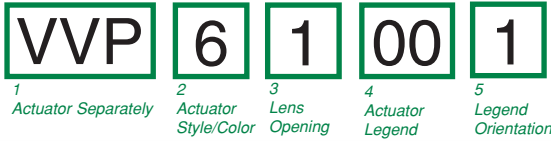
Contura II, III, IV, V Actuator only: VV with code A or C for selection 9, & with selections 10-14 in the ordering schemes.

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:



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		14	O		
	OFF		ON		O				
15	O	16	O	17	O		18		O
	F		N		N	F			
	F		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 TOP OF LENS SEPARATELY VVT
1	2	
Lens Separately	Color	
2 COLOR		
1	2	3
Clear	Smoke	White

Contura X, XI & XII actuator lens assembly:

actuator stem top lens

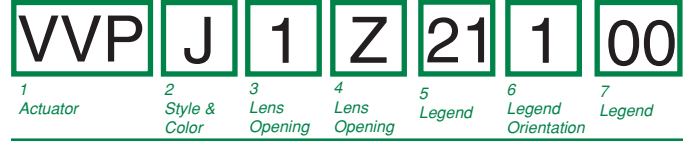
posts mount toward actuator stem bottom lens

two piece lens assembly

1 piece lens/bar lens are positioned the same as bottom lens for assembly, minus the top lens. Lenses snap in from bottom.

- 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:



1 CONTURA XII ACTUATOR SEPARATELY VVP										
2 ACTUATOR STYLE & COLOR										
J	K	N	M							
Black	Gray	White	Red							
3,4 LENS OPENING FOR										
Z	1	2								
No lens	Bar lens	Square lens								
5, 7 LENS OR BODY LEGEND²										
00	no legend	21	OFF	22	ON	23	O	24		
25	O	26	O	27	O	28				
	F		F		N					
For additional legend options & codes, see page 69 of this catalog.										
6 LEGEND ORIENTATION³										
0	No legend									
1	Orientation 1									
2	Orientation 2									

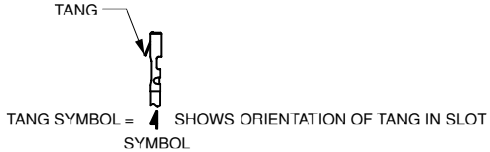
Contura X, XI & XII actuator lens assembly separately:

VVL 2 1 00 0								
1	2	3	4	5				
Lens Separately	Lens Style	Lens Color	Legend	Legend Orientation				
1 CONTURA X, XI & XII LENS SEPARATELY VVL								
2 LENS STYLE³								
1	2	3						
Bar lens	One Piece Square lens	Bottom of Two-Piece Square lens ⁵						
3 TRANSLUCENT LENS COLOR								
1	2	3	4	5	6			
Clear	White	Amber	Green ⁴	Red	Blue ⁴			
4 LENS OR BODY LEGEND²								
00	No legend							
21	OFF	22	ON	23	O	24		
25	O	26	O	27	O	28		
	F		N		F			
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							

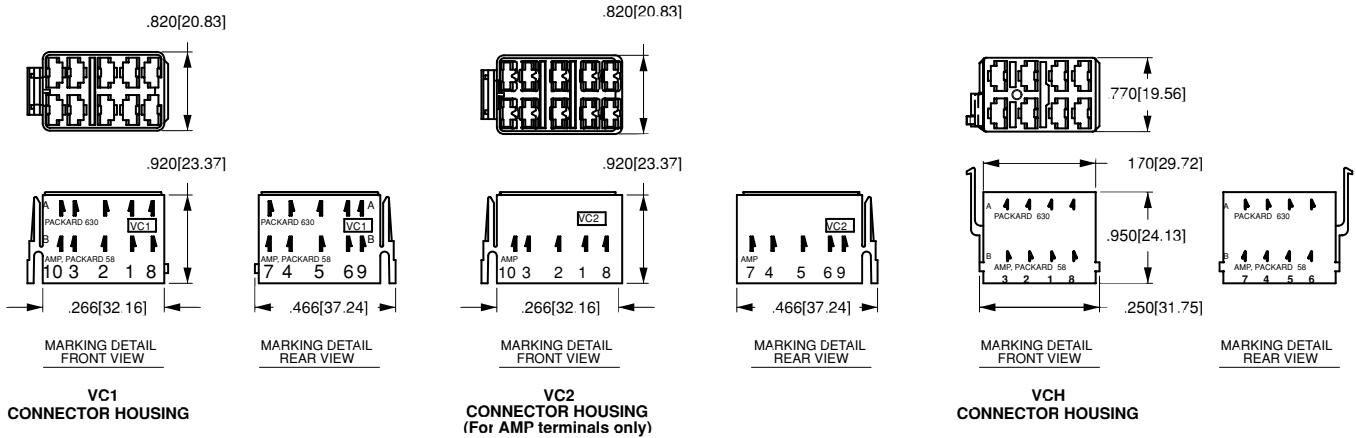
Easily integrate Contura products into your system, with Contura Accessories

Contura Connectors

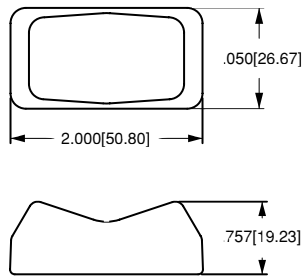
Q.C. SELECTION GUIDE					
COMPANY SERIES	PART NO		WIRE RANGE		ORIENTATION
	PLAIN BRASS	TIN PLATED BRASS	AWG	MM (REF)	
PACKARD 58 SERIES	02965580		12	3.0	B
	02965471	12010601	(2)16-14	(2)1.0-2.0	
	02965470		16-14	1.0-2.0	
	02965469	06288318	20-18	.5-.8	
PACKARD METRI-PACK 630 SERIES		12084590	12	3.0	A
		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 (2) 16	1.3-3 (2) 1.3	B
	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 Electrical Systems Warren, Ohio

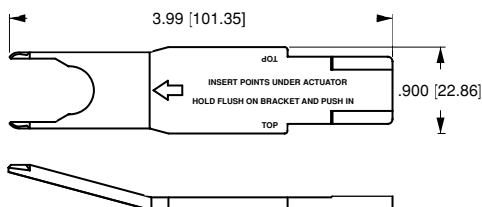


Contura X Boot



VB1-01
CONTURA X BOOT

Contura II, III, IV & V Actuator Removal Tool

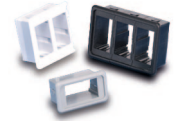
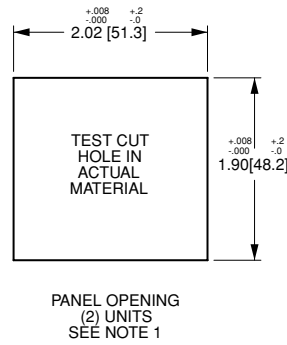
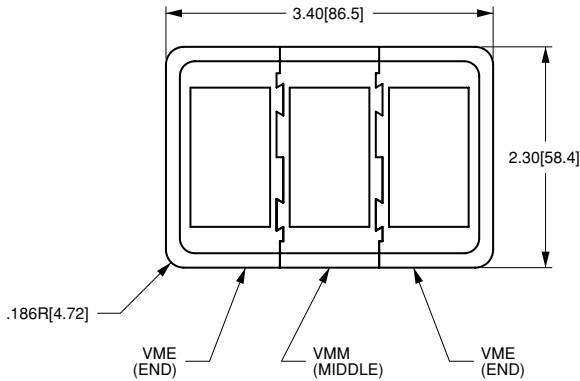


VRT
ACTUATOR REMOVAL
TOOL
(For flush bracket)



Contura Mounting Panels

Dimensional Specifications: in. [mm]



PANEL THICKNESS:
TOLERANCE:

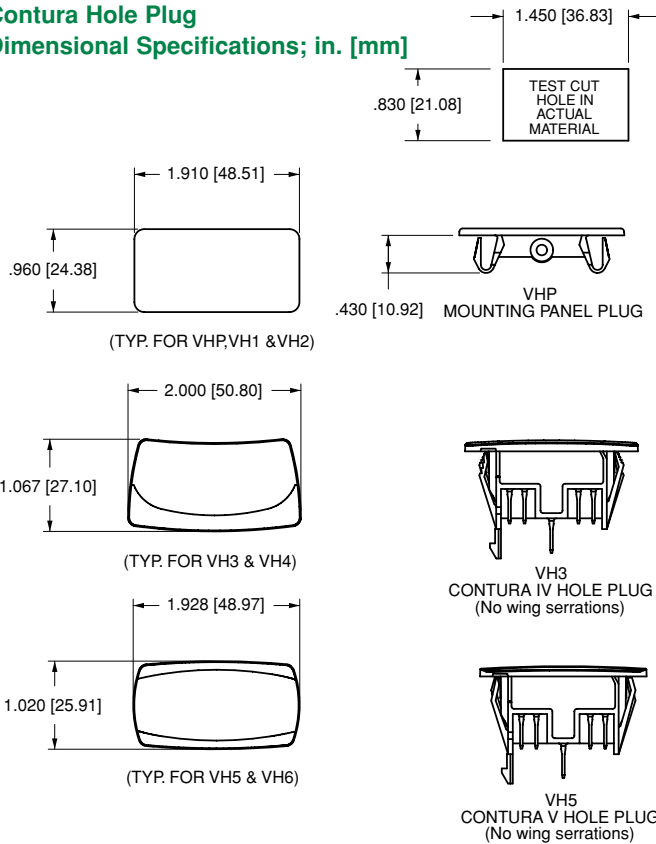
.062[1.57]
.093[2.36]
.125[3.17]
.187[4.75]
.250[6.35]
.375[9.52]

NOTES:

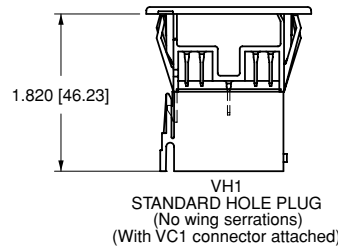
1. FOR ADDITIONAL UNITS, ADD 1.03 [26.2] PER UNIT.
2. FOR MORE THAN 2 V-SERIES SWITCHES, ADD MIDDLE SECTION.

Contura Hole Plug

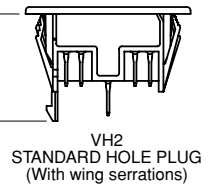
Dimensional Specifications; in. [mm]



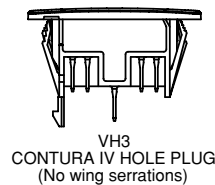
VHP
MOUNTING PANEL PLUG



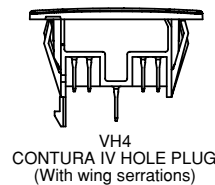
VH1
STANDARD HOLE PLUG
(No wing serrations)
(With VC1 connector attached)



VH2
STANDARD HOLE PLUG
(With wing serrations)



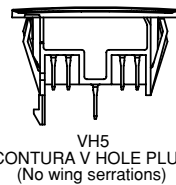
VH3
CONTURA IV HOLE PLUG
(No wing serrations)



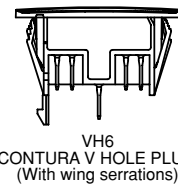
VH4
CONTURA IV HOLE PLUG
(With wing serrations)



DETAIL VIEW
VH3 & VH4
HOLE PLUGS
(No wing serrations
for ease of removal)



VH5
CONTURA V HOLE PLUG
(No wing serrations)



VH6
CONTURA V HOLE PLUG
(With wing serrations)



DETAIL VIEW
VH5 & VH6
HOLE PLUGS
(With wing serrations)

Additional V-Series Ratings

- | | | | |
|-----------|---|----------|--|
| 1 | .4VA @ 28VDC Resistive | L | 15A 125 VAC, 10A 250VAC, 1/2 HP 125-250 VAC; 6A 125 VAC L |
| 4 | 10A 250VAC 1/2 HP, 15A 125 VAC 1/2 H, No Agency Listings | M | .4VA/20A 12V (combi-contact)
(combination gold/silver contacts for borderline dry circuit applications) |
| 5 | 10A 250VAC 1/2 HP, 15A 125 VAC 1/2 HP, UL Recognized, CSA Certified | N | .4VA/15A 24V (combi-contact)
(combination gold/silver contacts for borderline dry circuit applications) |
| 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 | | |

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 Lamp 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

ORIENTATION OF ACTUATOR/LENS IN PANEL

ORIENTATION 1

ORIENTATION 2

ORIENTATION 3

ORIENTATION 4

MC MA MC MA

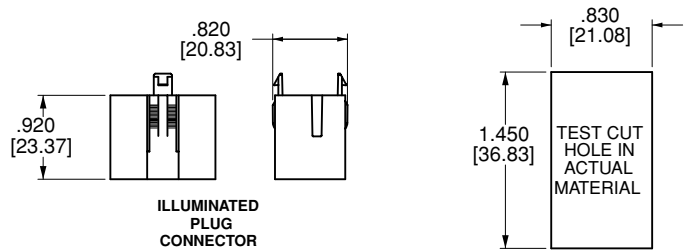
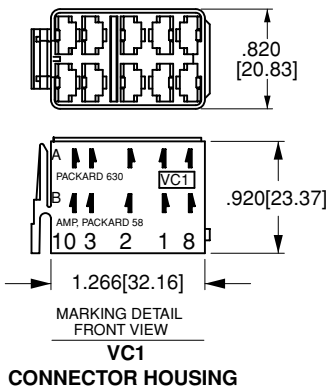
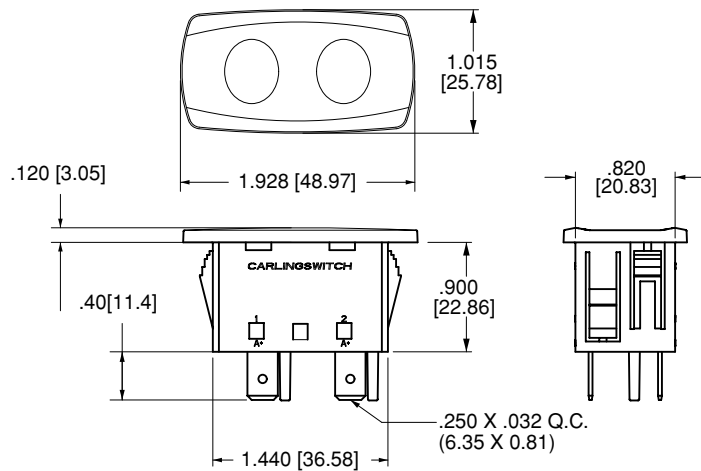
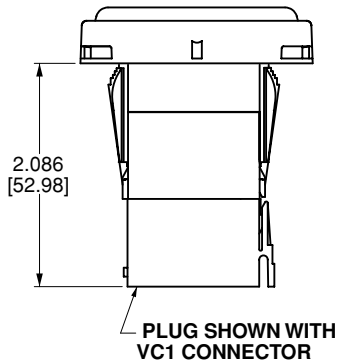
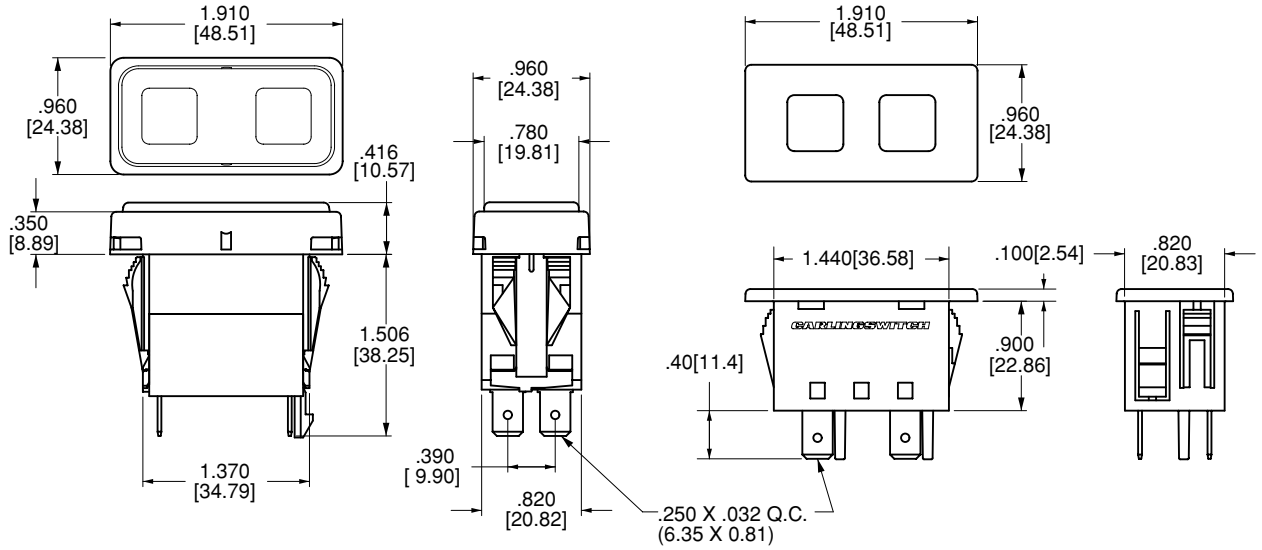
4F 4F100

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.

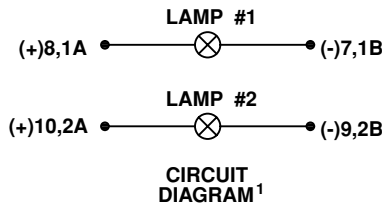
Dimensional Specifications: in. [mm]



ILLUMINATED PLUG MOUNTING HOLE (OVAL, FLUSH AND RAISED BEZELS)

(OVAL, FLUSH AND RAISED BEZELS) MOUNTING PANEL THICKNESSES:

.062 [1.57]	.250 [6.35]
.093 [2.36]	.375 [9.52]
.125 [3.17]	.500 [12.70]
.187 [4.75]	



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

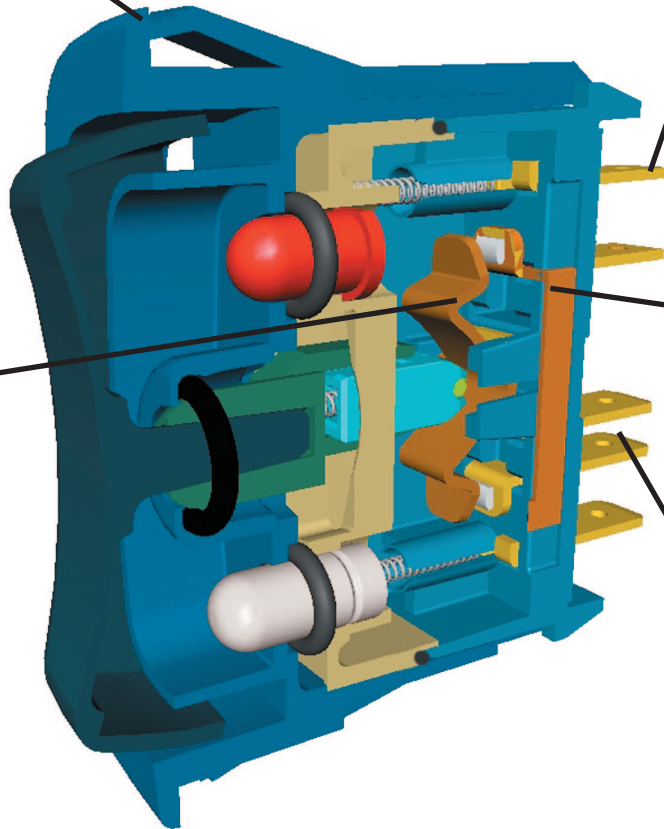
Roller pin mechanism eliminates need for lubricants, so it can withstand from -40°C to +85°C.

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 voltages to 24 VDC)
Seals	Rocker, base & bracket are sealed.
Base	Polyester blend rated to 85°C with a flammability rating of 94VO.
Actuator	Nylon 66 Reinforced, rated to 105°C (modular lens). Locking rocker, standard rocker & paddle. Laser etching with a polycarbonate actuator.
Lens	Polycarbonate rated at 100°C. Front snap-in.
Connector	Nylon 66 rated at 85°C. Polarized.

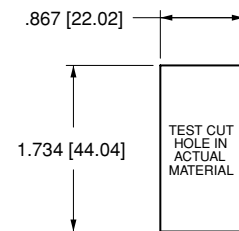
Actuator Travel (Angular Displacement)

2 position	26°
3 positions	13° from center

Environmental

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

Mounting Specifications



MOUNTING HOLE

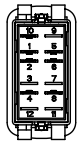
Panel Thickness Range
Acceptable Panel Thickness
.030 to .156 (.76mm to 3.96mm)
Recommended:
.030, .062, .093, .125 and .156

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^{3,4}

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

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.

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	E	F	G	H
Rockerguard at Lamp 2				

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.

0 - No Actuator Z - No Lens

Clear	White	Amber	Green	Red	Blue	
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

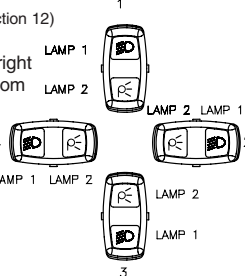
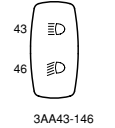
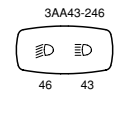
0 No legend (used with codes 11-18 in selection 12)

1 Orientation 1 - vertical, lamp 1 on top

2 Orientation 2 - horizontal, lamp 1 on right

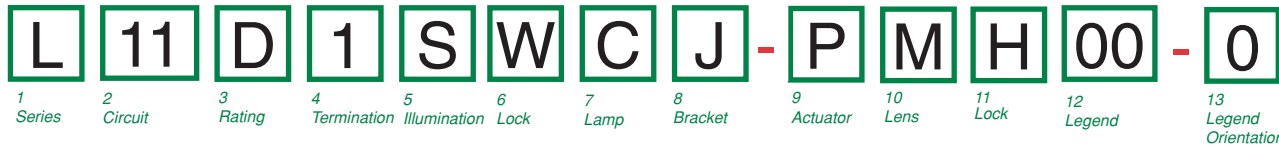
3 Orientation 3 - vertical, lamp 1 on bottom

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.

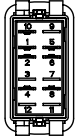


1 SERIES

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 (ON)
18	28	(ON)	OFF (ON)

CIRCUITS WITH JUMPER TERMINALS

30 ²	(2,4&5),(1,6&8)	OFF, OFF	(1,2&8),(4,5&6)
31 ²	1,2&5	2,3&7	2,4&8

PROGRESSIVE CIRCUITS

51	3&4	2&3	1&2
52	3&4	2&3	OFF
53	(3&4)	2&3	1&2
54	(3&4)	2&3	OFF
55	(3&4)	2&3	(1&2)
56	(3&4)	2&3	(OFF)
57	3&4	2&3	(OFF)
58	2&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.

S	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.

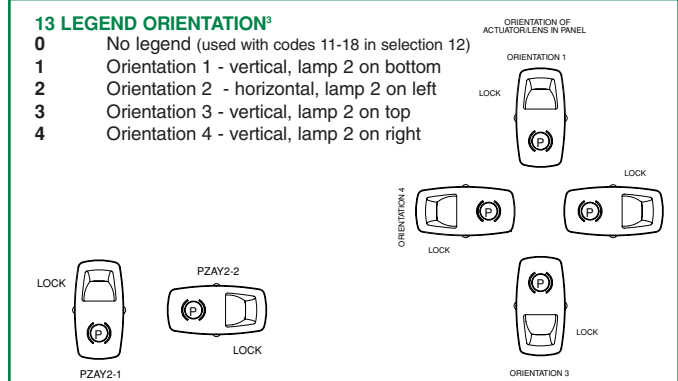
0 - No Actuator	Z - No Lens	Clear	White	Amber	Green	Red	Blue	
1	-	B	G	M	T	U	V	Large Transparent
-	7	C	H	N	P	W		Large Translucent
3	-	D	J	K	R			Bar Transparent
-	9	E	L					Bar Transparent

11 LOCK FUNCTION AND COLOR⁷

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



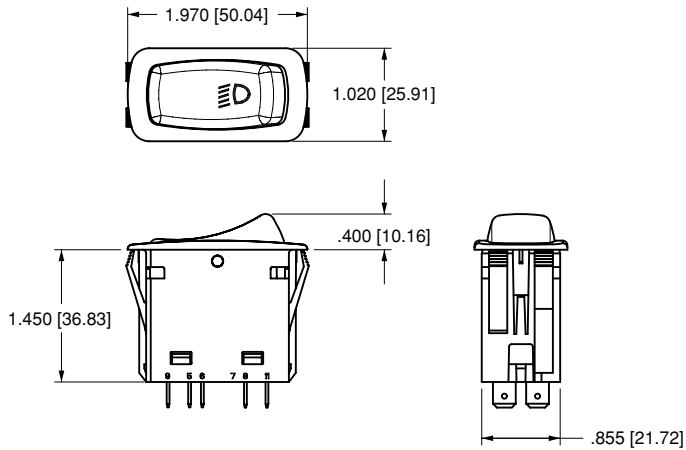
NOTES:

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

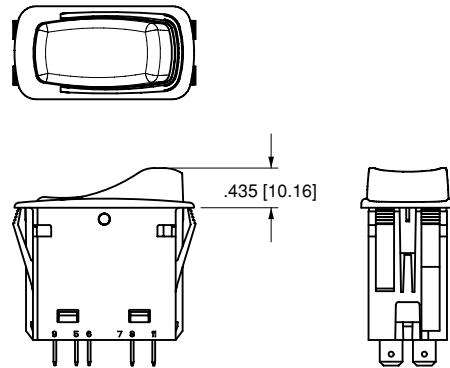
- 1 Custom colors are available. Consult factory.
- 2 Additional lamp circuits available. Consult factory.
- 3 Available only with 3 position circuits.
- 4 Termination 1 not available with rating 4.
- 5 Termination 3 only available with ratings 1, B and E.
- 6 Circuits 30, 31, 58 and 69, when used in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

Dimensional Specifications

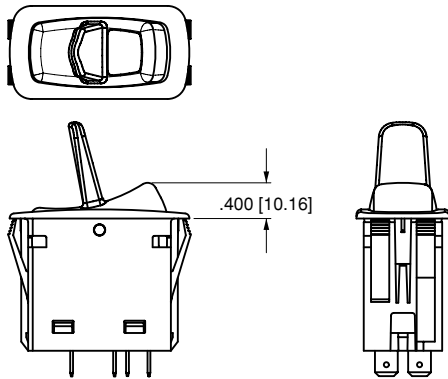
L SERIES
SHOWN WITH LASER ETCHED
ACTUATOR



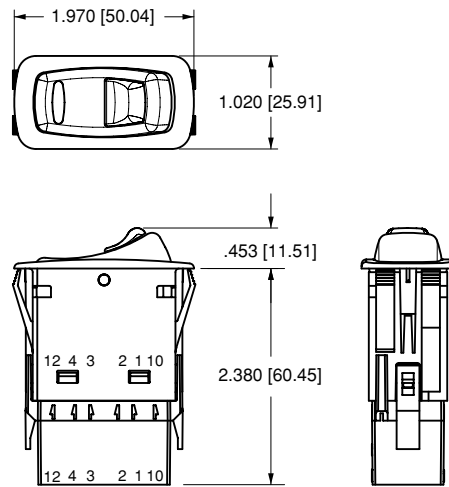
L SERIES
SHOWN WITH ROCKER GUARD



L SERIES
SHOWN WITH LARGE LENS
AND PADDLE ACTUATOR



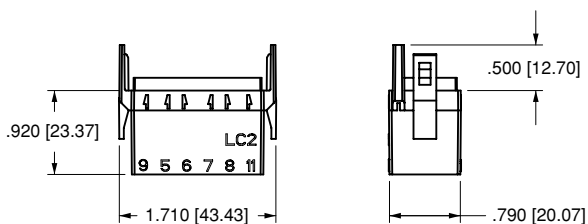
L SERIES
SHOWN WITH BAR LENS, LOCK
AND CONNECTOR



Connector

L SERIES
CONNECTOR

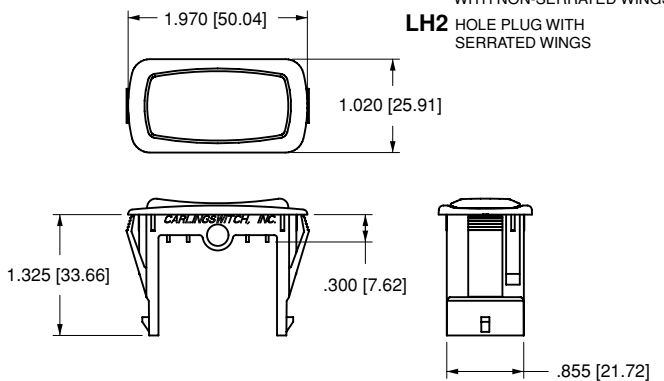
LC1-01 BLACK .250 TAB CONNECTOR
LC1-02 BLACK .187 TAB CONNECTOR



Hole Plug

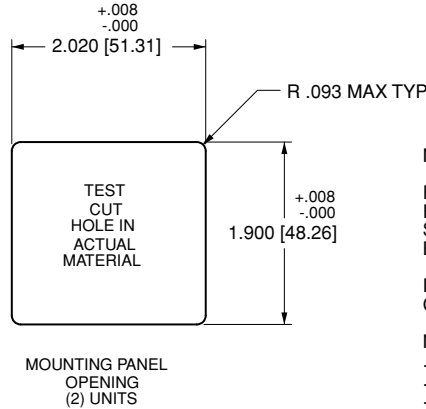
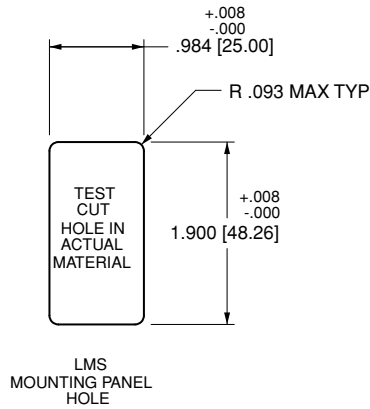
L SERIES
HOLE PLUG

LH1 REMOVABLE HOLE PLUG
WITH NON-SERRATED WINGS
LH2 HOLE PLUG WITH
SERRATED WINGS



Mounting Panel

Dimensional Specifications: in. [mm]



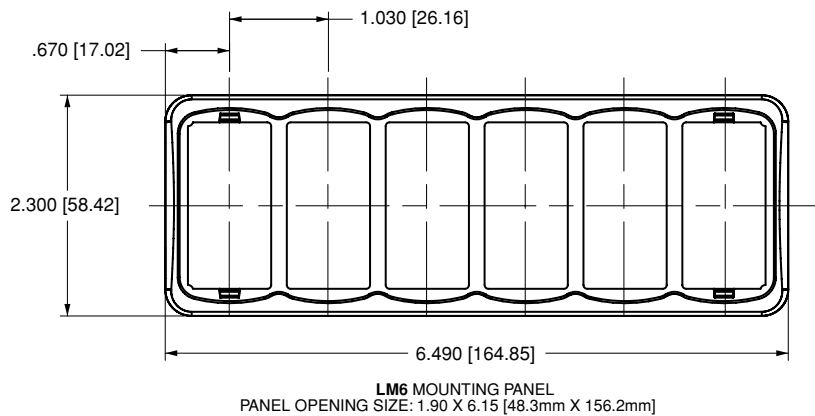
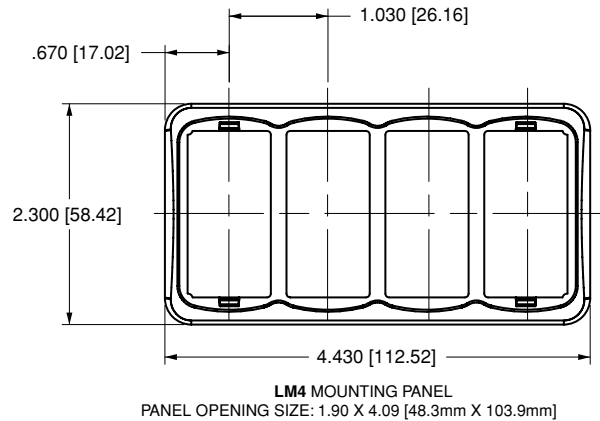
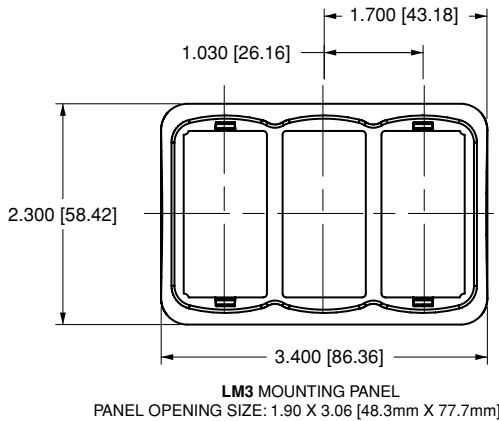
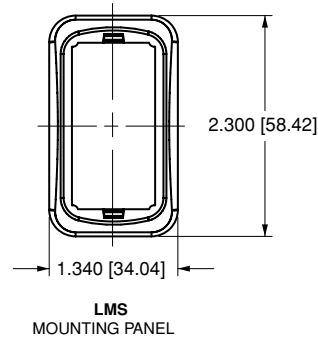
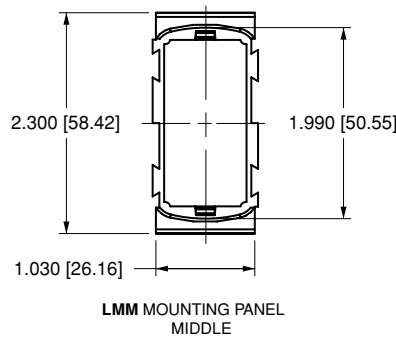
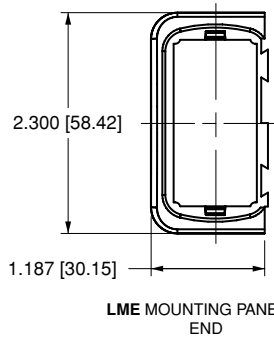
MOUNTING PANEL

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
11		22		51	
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

SYMBOL	DEFINITION
⊙	TERMINAL LOCATION
○	LAMP LOCATION
—	LAMP LOCATION
—▲—	MAINTAINED CIRCUIT
—⏏—	MOMENTARY CIRCUIT
⌒	2 POSITION CONNECTION
	2 POSITION
	3 POSITION

LEGEND		LEGEND CODE		
SYMBOL	NAME <small>(SYMBOL MEANING)</small>	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 <small>(SYMBOL MEANING)</small>	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
Terminals250 (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 ± 50 grams

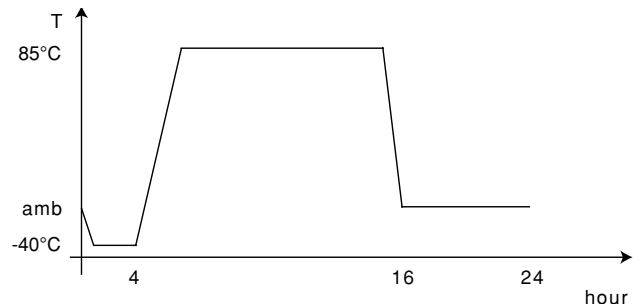
Physical Characteristics

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 ±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± 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	
12V LED C N H	Red Amber Green
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 Bar
-	9 E	K	R	W		Transparent Bar
5 A	-	-	-	-		Translucent Laser Etch

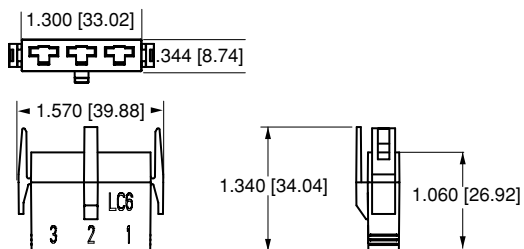
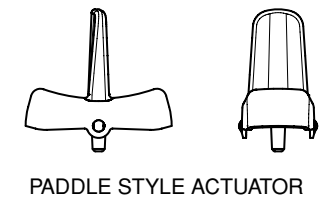
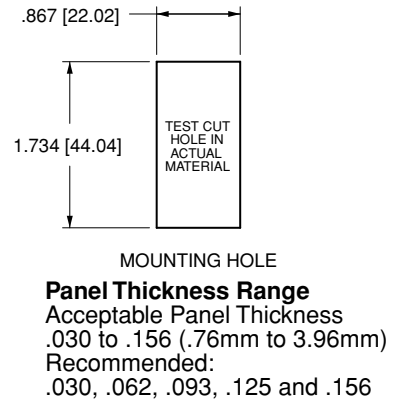
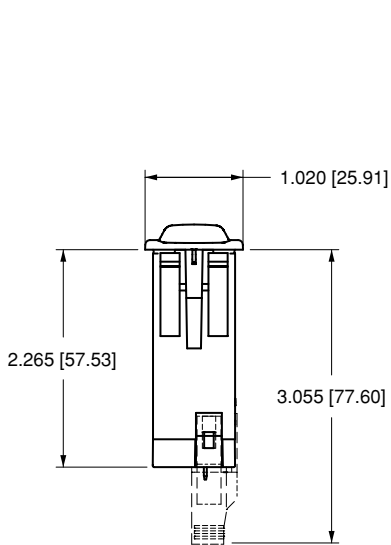
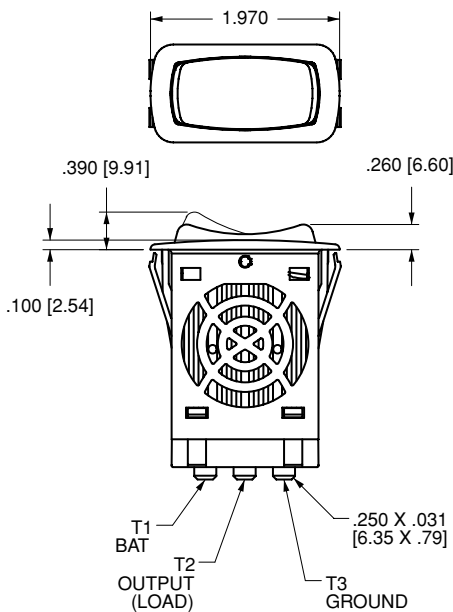
11 LEGEND #1		
00 No legend	FC DIM	FE BRIGHT
For additional legend options, see page 69 of this catalog.		

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.



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

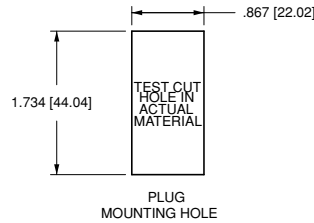
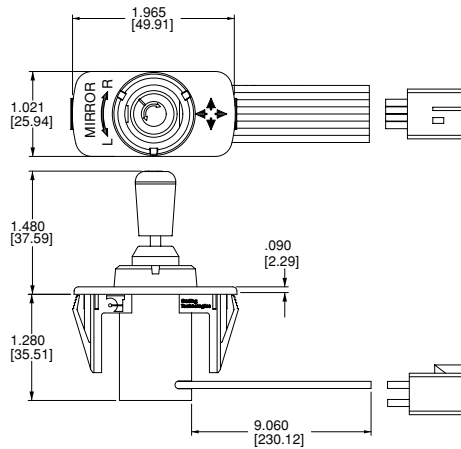
internal boot and potted wire leads protect critical components from dust and moisture

Termination¹

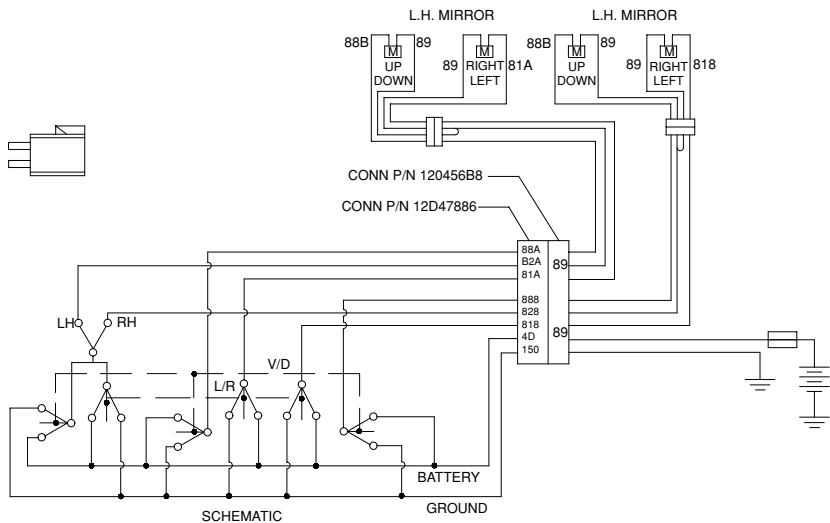
9" wire leads with Delphi-Packard connectors #12047886

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.
Frequency Amplitude
 5Hz 0.16 G²/Hz
 100Hz 0.16 G²/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).

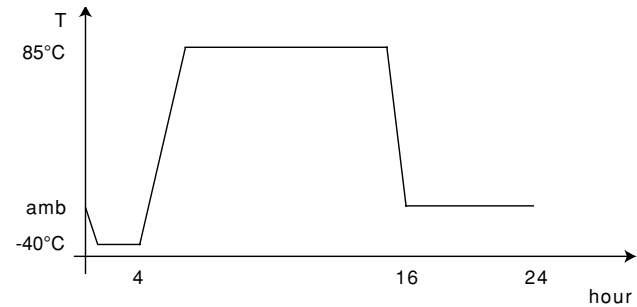
NOTES:
 For more detailed specifications, consult factory.

Physical Characteristics

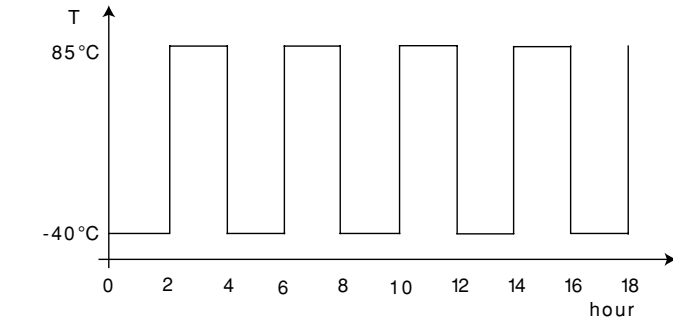
Illumination LED, rated 100,000 hours 1/2 life
 Cover Acetate
 Washer ActuatorSilicone
 Toggle ActuatorNylon 6/6 glass filled
 Bracket Nylon 6/6
 ConnectorNylon 6/6 rated 85° polarized
 Washer FunctionMomentary
 Toggle FunctionMaintained Intermittent
 Operation Momentary
 Weight 44 grams

Environmental

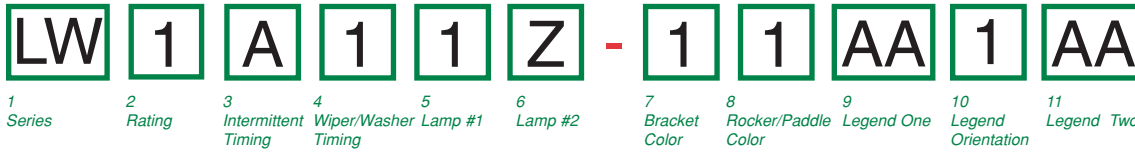
Operating Temperature . . . -25° C to + 85° C
 Temperature CycleAccording to SAE J1455, Sec. 4.1.3.1 (See Figure below)



Thermal Shock According to SAE J1455, Sec. 4.1.3.2 (see Fig)



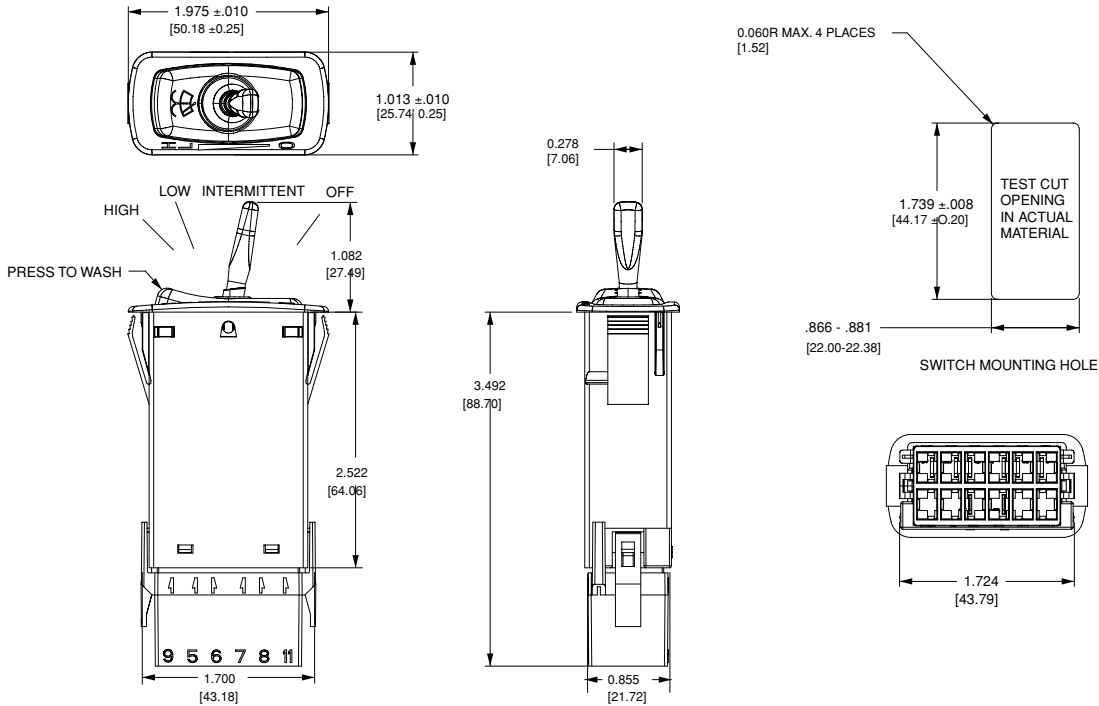
Humidity According to SAE J1455, Sec. 4.2.3 (30 cycles for 8 hrs. with maximum temperature of 85°C and 95% relative humidity.)
 Dust Bombardment According to SAE J1455, Sec. 4.7.3 (with dust concentration of 0.88gm/m³ for 24 hours.)
 Salt Spray MIL-STD-202G, Method 101D for 96 hours.



1 SERIES	
LW Wiper/Washer Control with six intermittent positions: low, high, wash/wipe	
2 RATING¹	
1	8A, 14VDC (1 relay)
2	4A, 28VDC (1 relay)
3	1A, 14VDC (1 relay)
4	1A, 14VDC (1 relay)
5	1A, 14VDC (2 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
1	green LED
2	red LED
3	amber LED
6 LAMP #2 (above wipe)	
Z	no lamp
1	green LED
2	red 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	<table border="0"> <tr> <td>16</td> <td>(4)</td> <td>A</td> <td>250V</td> <td>~</td> <td>T85</td> <td>μ</td> </tr> <tr> <td>resistive load amperage</td> <td>motor load amperage</td> <td>amperage</td> <td>voltage</td> <td>AC</td> <td>max. operating temp. in centigrade</td> <td>micro-gap (<3mm) approved</td> </tr> </table>	16	(4)	A	250V	~	T85	μ	resistive load amperage	motor load amperage	amperage	voltage	AC	max. operating temp. in centigrade	micro-gap (<3mm) approved
16	(4)	A	250V	~	T85	μ									
resistive load amperage	motor load amperage	amperage	voltage	AC	max. operating temp. in centigrade	micro-gap (<3mm) approved									
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.

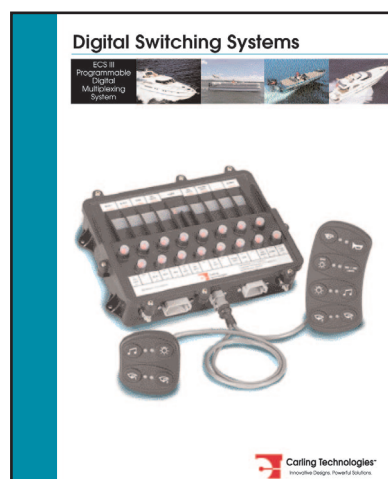
Circuit Protection



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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