



Carling Technologies™
Innovative Designs. Powerful Solutions.



Product Type
Sealed Rocker Switches

Product Series
V-Series: Contura X, XI & XII

Description

The V-Series Contura X, XI & XII snap-in rocker/paddle switches offer countless unique options including choices for ratings, circuits, colors, illuminations and and symbols. These single or double pole switches feature removable actuators in a choice of actuator styles and colors, and can be illuminated with either square or bar shaped lenses. Actuators and square lenses may be purchased and stocked separately from the base assembly.

Contura X, XI & XII also feature a raised bracket/bezel which helps prevent inadvertent actuation of the rocker. For increased durability of imprinted lens symbols, square lenses are offered in 1-piece or 2-piece constructions. An optional plug-in terminal connector enables pre-wiring of wire harness.

The Contura switches, with sealed front panel components, are certified to IP66 and IP68, signifying complete protection against dust and prolonged spray and submersion under pressure, and are recognized to UL1500 - Ignition Protection for Marine Products. These switches are vibration, shock, thermoshock, moisture and salt spray resistant. Temperature ratings range from -40 deg. C to 85 deg. C.

Certifications	UL CSA VDE DEMKO SEMKO NEMKO FIMKO BEAB
Number of Poles	1-2 poles
Ratings	10A 250VAC
	15A 125VAC
	1/2HP
	15A 125VAC
	1/2HP
	12(2)A 125VAC uT85
	15A 125VAC
	1/2HP
	12(6)A 125VAC T85
	10A 250VAC
	15A 125VAC
	1/2HP 125-250VAC
	12(2)A 250VAC uT85
	10A 250VAC
	15A 125VAC
	1/2HP 125-250VAC
	12(6)A 250VAC T85

	15A 24V
	20A 18V
	20A 12V
	20A 6V
	20A 3V
Dielectric Strength	2,000 V RMS opposite polarity 4,000 V RMS between live parts and operator accessible surface
Insulation Resistance	50 megohms (minimum)
Base Material	Polyester
Actuator Style	Concave or convex rocker with grooved finger traction Concave or convex with smooth surface Illuminated concave or convex rocker with square lens(es) Illuminated concave or convex rocker with bar lens(es) Illuminated concave or convex rocker with combination square and bar lenses Locking Rocker Paddle Illuminated paddle
Actuator Material	Underlay/lens - Polycarbonate Hard overlay - Nylon Soft Touch overlay - Thermoplastic elastomer
Bracket/Bezel Material	Nylon
Terminal Options	.250 QC Tabs
Mounting Method	Snap-In
Mounting Hole Dimensions	.83" x 1.45" ; 21.08mm x 36.83mm
Value Added	Custom colors and legends available Special circuits Hazard warning circuits Square lenses offered in 1-piece or 2-piece constructions (for increased durability of imprinted lens symbols) Mounting Panels Optional lock-on terminal connector Hole Plug Actuator removal tool

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

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

Maximum Design Options with minimum inventories

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

Withstands Extreme Temperatures

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

Seals out water, dust and debris

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

Clean Connections

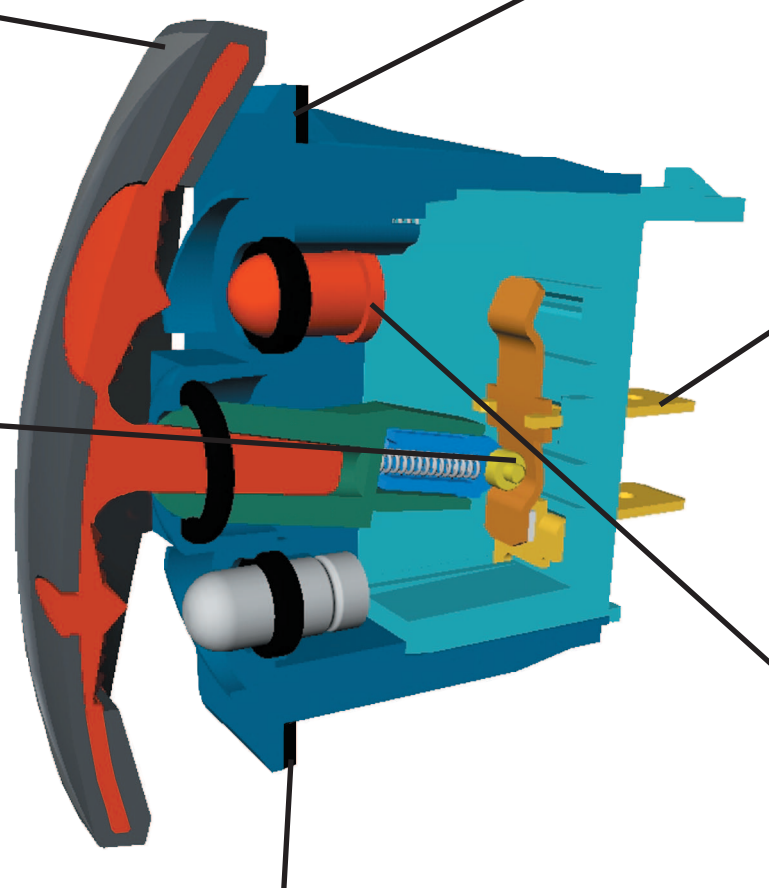
Offered in both eight and ten terminal base options. AMP & Packard compatible connectors available.

Multiple Lighting Options

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

Optional Panel Seal

Prevents water/dust egress behind panel.



V-Series Contura Switches

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



Contura II

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

Contura III

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

Contura IV

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

Contura V

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



Contura X

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

Contura XI

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

Contura XII

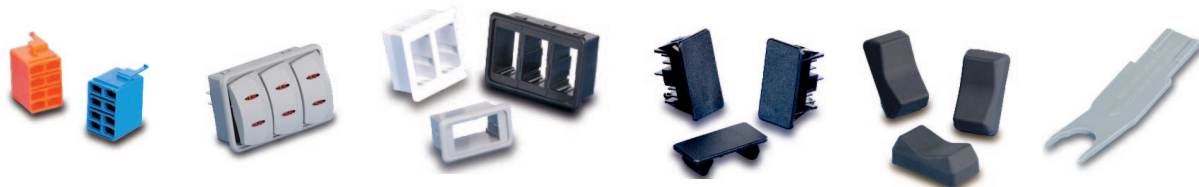
The Contura XII version incorporates a paddle style handle on the raised bracket/bezel, also used in the Contura X and XI switch. The contoured handle design provides intuitive recognition and ease of operation for a variety of transportation related applications, and is available with all Contura X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

Illuminated Plug

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

V-Series Accessories/Options

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



Electrical

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

Mechanical

Endurance 150,000 cycles minimum

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

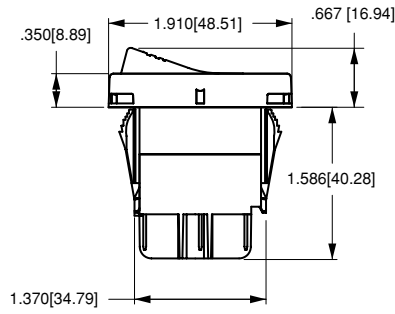
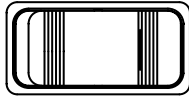


Environmental

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.

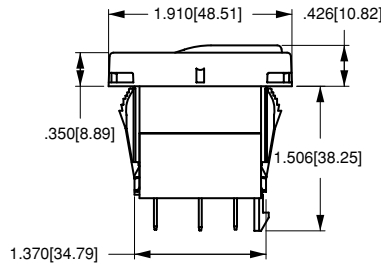
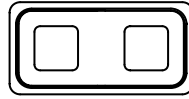
Dimensional Specifications: in. [mm]

CONTURA X STYLE
SHOWN WITH RAISED BRACKET



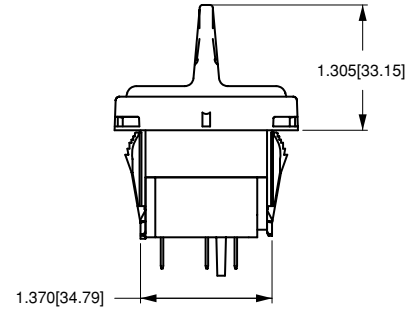
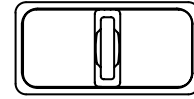
8 TERMINAL BASE W/BARRIERS

CONTURA XI STYLE
SHOWN WITH RAISED BRACKET AND TWO SQUARE LENSES

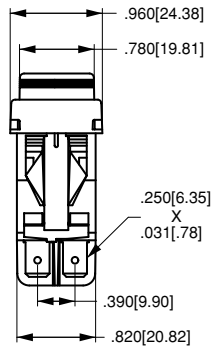


10 TERMINAL BASE W/O BARRIERS

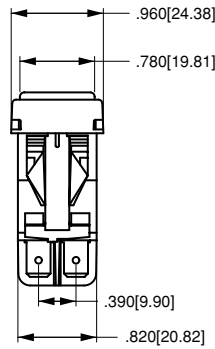
CONTURA XII STYLE
SHOWN WITH PADDLE ACTUATOR



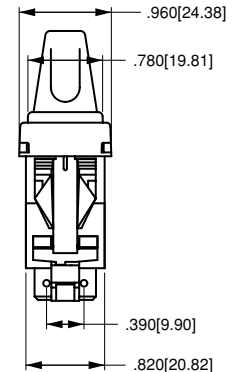
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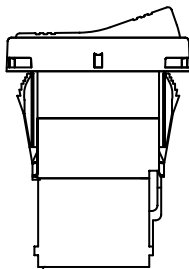
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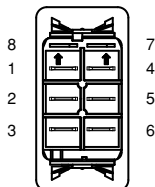
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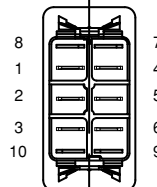
10 TERMINAL BASE W/O BARRIERS



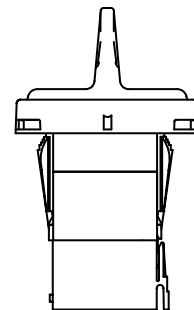
SWITCH SHOWN WITH VCH CONNECTOR 8 TERMINAL



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 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.

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
White	W	Y
Gray	G	H

9 ACTUATOR

	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

3 RATING²

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).

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	White	Amber	Green	Red	Blue	Z - No Lens	Lens Style
3	8	D	J	K	P	V	Bar
4	9	E	K	R	W		One piece Square
5	A	F	L	S	Y		Two piece Square*
2	7	C	H	N	U		(w/ clear top protective lens)
1	6	B	G	M	T		Two piece Square*
							(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.

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.

12 ACTUATOR LENS OR BODY LEGEND²

00 - No Legend this location/No actuator

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

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

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-
		& # 2	Up	3+ 7-
G	7	# 1	Independent	8+ 7-
		& # 2	Up	3+ 6-
H	Z	# 2	Independent	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 6+ 7-
Independent # 1 8+ 7-
Independent & # 2 6+ 7-

Selections for Double Pole Switches Only:
L 9 # 1 Down 3+ 6-
M R # 2 Up 3+ 6-
N T # 1 Down 3+ 6-
& # 2 Down 1+ 4-
P V # 1 Up 1+ 4-
& # 2 Up 3+ 6-
U Y # 1 Independent 8+ 7-
& # 2 Independent 10+ 9-

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.