

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 125°C with a UL flammability rating of 94 V-O.
Contura II, III, IV, V Actuator	Hard Surface: Basic actuator structure molded of thermoplastic polycarbonate with a hard Nylon 66 thermoplastic surface overlay. Soft Surface: Basic actuator structure molded of thermoplastic polycarbonate with an elastomer overlay.
Contura X, XI, XII Actuator, VP	Nylon 66 Reinforced rated to 105°C
Lens	Polycarbonate rated at 100°C

Actuator Travel (Angular Displacement)

2 position	18°
3 positions	9° from center

Mounting Specifications

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

Agency Certifications



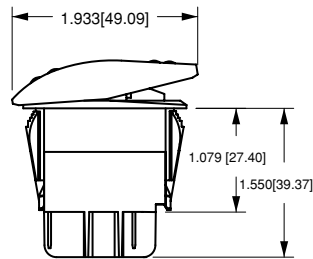
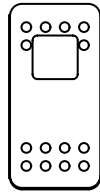
Environmental

Environmental	Sealed version: IP68, in accordance with IEC 529, BS 5490, DIN 400 50 & NFC 20 010. This rating applies to front panel components and signifies protection against dust and the prolonged effects of immersion under pressure. The standard test for immersion under pressure requires submersion under one meter of water for 30 minutes. The V-Series switch has exceeded these parameters, having been actuated and illuminated during submersion. NOTE: Sealed switch with optional panel gasket will meet IP67 rating.
Corrosion	Flowing Mixed Gas (FMG) Class III 3 year accelerated exposure per ASTM B-827, B-845 Silver and gold contacts
Operating Temperature . .	-40° C to + 85° C
Vibration 1	Per Mil-Std 202F, Method 204D Test Condition A 0.06 DA or 10G's 10-500 Hz. Tested with VCH connector. Test criteria - No loss of circuit during test and pre and post test contact resistance.
Vibration 2	Resonance search 24-50 Hz 0.40 DA 50-2000 ±10 G's peak Results Horizontal Axis 3-5 G's max. Random 24 Hz 0.06 PSD-Gsq/Hz 60 Hz 0.50 100 Hz 0.50 200 Hz 0.025 2000 Hz 0.025 No loss of circuit during test; <10µ seconds chatter.
Shock	Per Mil-Std 202F, Method 213B, Test Condition K @ 30G's. Tested with VCH connector. Test criteria - No loss of circuit during test, pre and post test contact resistance.
Salt Spray	Per Mil-Std 202F, Method 101D, Test Condition A, 48 Hrs. Sealed version only.
Dust	Per Mil-Std 810C, Method 510.2 Air Velocity 300 ±200 Feet/Min, Test Duration 16 Hrs.
Thermal Shock	Per Mil-Std 202F, Method 107F, Test Condition A, -55°C to 85°C. Test criteria - pre and post test contact resistance
Moisture Resistance	Per Mil-Std 202F, Method 106F, Test Criteria - pre and post test contact resistance
Ignition Protection	All Contura switches with sealed construction meet the requirements of UL1500/ISO8846 for ignition protection, in addition to conformance with EC directive 94/25/EC for marine products.

Dimensional Specifications: in. [mm]

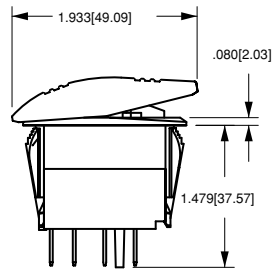
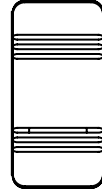
CONTURA II STYLE

SHOWN WITH
SQUARE LENS



**8 TERMINAL
BASE
W/BARRIERS**

CONTURA III STYLE

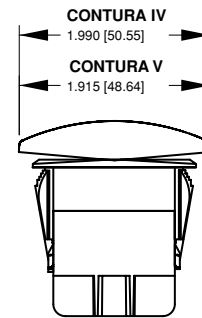
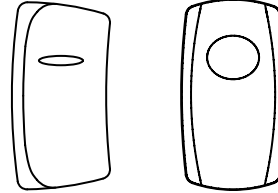


**8 TERMINAL
BASE
W/O BARRIERS**

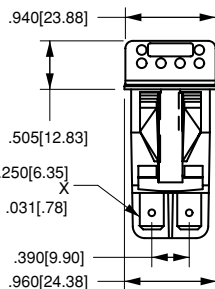
CONTURA IV & V STYLE

IV - SHOWN WITH
BAR LENS

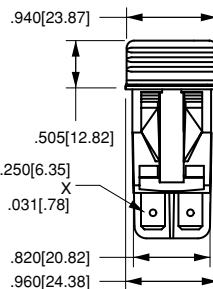
V - SHOWN WITH
ROUND LENS



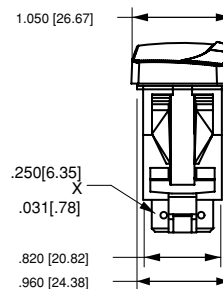
**10 TERMINAL BASE
W/BARRIERS**



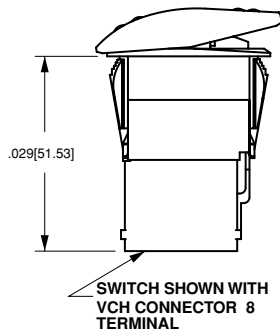
**8 TERMINAL BASE
W/BARRIERS**



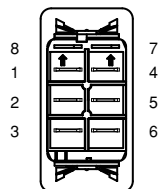
**10 TERMINAL BASE
W/O BARRIERS**



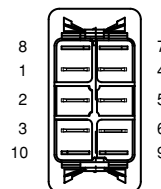
**10 TERMINAL BASE
W/O BARRIERS**



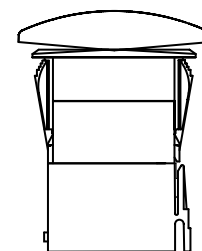
SWITCH SHOWN WITH
VCH CONNECTOR 8
TERMINAL



**BOTTOM VIEW
TERMINAL
ARRANGEMENT
8 TERMINAL BASE**



**BOTTOM VIEW
TERMINAL
ARRANGEMENT
10 TERMINAL BASE**



SWITCH SHOWN WITH
VC1 CONNECTOR 10
TERMINAL

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

1 Series 2 Circuit 3 Rating 4 Termination 5 Illumination 6 Lamp 7 Lamp 8 Bracket 9 Actuator 10 Lens 11 Color 12 Legend 13 Legend Orientation 14 Actuator Lens Legend

1 SERIES

V

2 CIRCUIT

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

() - momentary

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

Position:

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

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

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

4 TERMINATION/BASE STYLE

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

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

5 ILLUMINATION & SWITCH SEALING

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

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

Selections for Single Pole Switches Only:

Selections for Double Pole Switches Only:

6,7 LAMP (same coding for both selections)

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

No lamp	0
Neon	1 125VAC 2 250VAC
Incandescent	4 3V 5 6V 6 12V 7 18V 8 24V
LED*	
2VDC	Red A Amber L Green F Red R
6VDC	B M 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 II	A B C D
Contura III	

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.

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 II:					
4	9	E	K	R	W
5	A	F	L	S	Y

11 ACTUATOR COLOR¹ AND TEXTURE

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

12 ACTUATOR LENS OR BODY LEGENDS²

00 - No Legend this location/No actuator

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

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

13 LEGEND ORIENTATION

0	No legend (used with codes 11-18 in selection 12)
1	Orientation 1
2	Orientation 2
3	Orientation 3
4	Orientation 4

14 ACTUATOR LENS LEGEND²

00 No legend this location / no actuator

(used with codes 11-18 in selection 12) Selection 14 required when switch requires two legends. If the two legends consist of one lens and one body legend, lens legend must be specified in selection 12; body legend specified in selection 14.
For legend options & codes, see page 69 of this catalog

NOTES

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

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

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

1 SERIES

V

2 CIRCUIT

Terminal Connections as viewed from bottom of switch:

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

() - momentary

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

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

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

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

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

3 RATING

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

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

4 TERMINATION/BASE STYLE

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

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

5 ILLUMINATION & SWITCH SEALING

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

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

Selections for Double Pole Switches Only:

6 LOCK

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

7 LAMP

Lamp above terminals 3 & 6 end of switch.

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

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

8 FLUSH BRACKET COLOR*, PANEL SEAL

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

9 HARD SURFACE ACTUATOR*

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

Actuator orientation above terminals: 3,6 1,4

10 LENS

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

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

11 ACTUATOR LOCK FUNCTION AND COLOR*

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

12 ACTUATOR LENS OR BODY LEGEND*

00 - No Legend

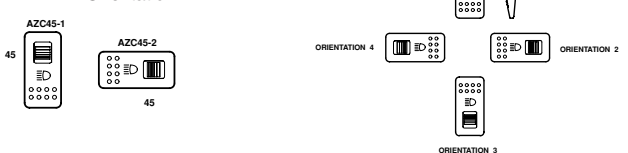
21 OFF	22 ON	23 O	24 I
25 O	26 O	27 O	28 I
F	N		

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

13 LEGEND ORIENTATION*

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

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



NOTES

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

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

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

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

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

Panel Seal: VPS

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

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

Contura X & XI actuators without lenses separately:

VVP 6 1 00 1

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

1 CONTURA X & XI ACTUATOR SEPARATELY VVP

2 ACTUATOR STYLE & COLOR

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

3 LENS OPENING FOR¹

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

4 ACTUATOR LENS OR BODY LEGEND

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

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

5 LEGEND ORIENTATION²

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

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

VVT 1

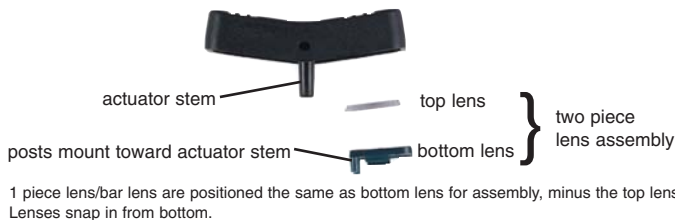
1 Lens Separately 2 Color

**1 TOP OF LENS SEPARATELY
VVT**

2 COLOR

1 Clear 2 Smoke 3 White

Contura X, XI & XII actuator lens assembly:



NOTES

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

Contura XII actuators without lenses separately:

VVP J 1 Z 21 1 00

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

1 CONTURA XII ACTUATOR SEPARATELY VVP

2 ACTUATOR STYLE & COLOR

J	Black	K	Gray	N	White	M	Red
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3,4 LENS OPENING FOR

Z	No lens	1	Bar lens	2	Square lens
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5, 7 LENS OR BODY LEGEND²

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

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

6 LEGEND ORIENTATION³

0	No legend
1	Orientation 1
2	Orientation 2

Contura X, XI & XII actuator lens assembly separately:

VVL 2 1 00 0

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

1 CONTURA X, XI & XII LENS SEPARATELY VVL

2 LENS STYLE³

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

1	Clear	2	White	3	Amber	4	Green ⁴	5	Red	6	Blue ⁴
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4 LENS OR BODY LEGEND²

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

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

5 LEGEND ORIENTATION³

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