

## 1

**Selector Switch Units**

UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

- Two-, three- and four-position—maintained
- Non-illuminated and illuminated

**Two-Position Maint. Switch Knob****Two-Position Selector Switch**

Operator Position <sup>①</sup>		Operator Action <sup>②</sup>	Contact Type	Mounting Location		Cam Code	Non-Illuminated	Black Lever	Illuminated—120V Transformer	
				A	B		Black Knob Catalog Number <sup>③</sup>	Catalog Number <sup>③</sup>	Red Knob Catalog Number <sup>③</sup>	Red Lever Catalog Number <sup>③</sup>
X	0	M	1NC			1	E34VFBK1-1X	E34VFB1-1X	E34VFB120ER-1X	E34VFB120FR-1X
0	X		1NO							

**Three-Position Maint. Switch Knob****Three-Position Selector Switch**

Operator Position <sup>①</sup>			Operator Action <sup>②</sup>	Contact Type	Mounting Location		Cam Code	Non-Illuminated	Black Lever	Illuminated—120V Transformer	
					A	B		Black Knob Catalog Number <sup>③</sup>	Catalog Number <sup>③</sup>	Red Knob Catalog Number <sup>③</sup>	Red Lever Catalog Number <sup>③</sup>
X	0	0	M	1NO			3	E34VHBK1-2X	E34VHBL1-2X	E34VHB120TER-2X	E34VHB120TFR-2X
0	0	X		1NO							
X	0	0	M	1NO			3	E34VHBK1-23X	E34VHBL1-23X	E34VHB120TER-23X	E34VHB120TFR-23X
0	X	0									
0	0	X		2NC (Series)							
			1NO								

**Four-Position Maint. Switch Lever****Four-Position Selector Switch**

Operator Position <sup>①</sup>				Operator Action <sup>②</sup>	Contact Type	Mounting Location		Cam Code	Non-Illuminated	Black Lever	Illuminated—120V Transformer	
						A	B		Black Knob Catalog Number <sup>③</sup>	Catalog Number <sup>③</sup>	Red Knob Catalog Number <sup>③</sup>	Red Lever Catalog Number <sup>③</sup>
X	0	0	0	M	1NC			7	E34VTBK1-23X	E34VTBL1-23X	E34VRB120TER-23X	E34VRB120TFR-23X
0	X	0	0		1NO							
0	0	X	0	M	1NO							
0	0	0	X		1NC							

**Color Selection, Non-Illuminated**

Color	Code Letter	Color	Code Letter
Black	1	White	5
Red	2	Blue	6
Green	3	Gray	7
Yellow	4	Orange	8

**Notes**For Light Unit Voltage Suffix and Knobs, Levers tables, see **Page V7-T1-278**.Use NEMA 4X 10250T operators where exposed to ultraviolet light, see **Pages V7-T1-182 to V7-T1-253**.<sup>①</sup> X = closed circuit, 0 = open circuit.<sup>②</sup> M = Maintained.<sup>③</sup> To order different type or color selector switch, substitute the underlined character with appropriate suffix code from the Color Selection table. Example: E34VFBK2-X1.

### Selector Switch Selection



#### Cam and Contact Block Selection

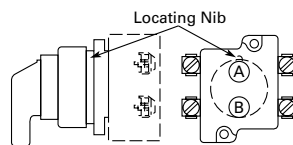
Selector switches in their varied forms (two-position, three-position and four-position) are a big factor contributing to the great flexibility of control that a well rounded line of “pushbuttons” can achieve. Because of their flexibility, they tend to cause difficulty with product selection and application. The following systematic approach should simplify that task.

Cam and contact block selection is better understood if you:

- Work with each incoming and outgoing wire/circuit separately.
- Recognize the terms NO and NC only identify the type of contact by its mode before mounting to the operator. The “X-O” chart (Page V7-T1-275) shows how that contact will act after assembly to the operator with the selected cam shape. X = closed circuit, O = open circuit.

- Up to six NO or NC contacts may be mounted behind each plunger location for a total of twelve contacts. Single circuit contact blocks have only one plunger with the other side of the block “open.” Therefore, single circuit contact blocks transmit motion to blocks behind them only for the position containing the circuit.
- Each cam has two separate lobes, each of which operates one of the two contact block plungers independently of each other. Those are identified as position A (locating nib side) and position B (opposite of locating nib). The position designations give direction in selecting and mounting of the contact blocks.

#### Contact Circuit Locations

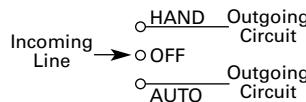


#### Systematic Approach

Application: **HAND-OFF-AUTO** selector switch. In this circuit, one incoming line is distributed to two other outgoing circuits by the switch. The two circuits can be looked at individually.

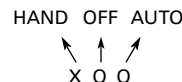
#### Step 1: Elementary Diagram.

Construct on paper, or in your mind, a simple elementary diagram of the switching scheme as follows:



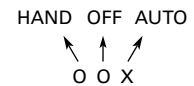
#### Step 2: “X-O” Pattern.

From the elementary diagram, you can construct an “X-O” diagram which describes when the contacts are to be closed (X) or open (O) in the various positions of the switch. The “X-O” for the **HAND** circuit looks like this:



In this circuit, you want a contact closed on the left (HAND) but open in the center and right.

For the **AUTO** circuit, the “X-O” diagram would look like this:



Putting them together, the complete “X-O” diagram is:



Once the “X-O” diagram has been generated, the next step is to select the cam and contact block, or blocks, needed to perform the desired “X-O” functions. The selection tables on the following pages list the various types (shapes) of cams by number to choose from and the type of contact and position to achieve the function outlined in your “X-O” diagram.

**Selector Switch Operators**

UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

**Two-Position Knob Selector Switch****Operators with Knob Assembled**

Positions	Operator Action <sup>①</sup>	Black Knob Selector Switch— Vertical Mounting <sup>②</sup>	Cam Code <sup>③</sup>	Catalog Number <sup>④</sup>
Two-position—60° throw	M  M		1	<u>E34VFBK1</u>
	M  S		1	<u>E34VEBK1</u>
Three-position—60° throw	M  M		2	<u>E34VGBK1</u>
			3	<u>E34VHBK1</u>
	S  M		2	<u>E34VJBK1</u>
			3	<u>E34VKBK1</u>
	S  M		2	<u>E34VLBK1</u>
			3	<u>E34VMBK1</u>
Four-position—40° throw	M  M		2	<u>E34VNBK1</u>
			3	<u>E34VPBK1</u>
	M  M		7	<u>E34VTBK1</u>

**Key Operators****Three-Position Keyed Selector Switch****Key Operators with Cam and Cap**

Positions	Operator Action <sup>①</sup>	Cam Code <sup>③</sup>	Key Removal Positions <sup>⑤</sup>	Vertical Mounting Catalog Number	Horiz. Mounting Catalog Number
Two-position—60° throw	M  M	1	1, 2, 3	<u>E34KFB</u> _	<u>E34KFHB</u> _
	M  S	1	2	<u>E34KEB</u> _	<u>E34KEHB</u> _
Three-position—60° throw	M  M	2	1–7	<u>E34KGB</u> _	<u>E34KGHB</u> _
		3		<u>E34KHB</u> _	<u>E34KHGB</u> _
	S  M	2	1, 4, 5	<u>E34KJB</u> _	<u>E34KJHB</u> _
		3		<u>E34KKB</u> _	<u>E34KKHB</u> _
	S  M	2	4	<u>E34KLB</u> _	<u>E34KLHB</u> _
		3		<u>E34KMB</u> _	<u>E34KMHB</u> _
Four-position—40° throw	M  M	2	2, 4, 6	<u>E34KNB</u> _	<u>E34KNHB</u> _
		3		<u>E34KPB</u> _	<u>E34KPHB</u> _
	M  M	7	7	<u>E34KTB</u> _	<u>E34KTHB</u> _

**Notes**Use NEMA 4X 10250T operators where exposed to ultraviolet light, see **Pages V7-T1-182 to V7-T1-253**.<sup>①</sup> M = Maintained. S = Spring return in direction of arrow (R).<sup>②</sup> Field convertible to horizontal mounting.<sup>③</sup> For selection of the proper cam and contact block to obtain the proper circuit sequence, see selection instructions and tables on **Pages V7-T1-273 to V7-T1-275**.<sup>④</sup> For other colors of either the knob or lever, replace the underlined characters of the catalog number with the appropriate suffix code from Alternate Knob and Lever table on **Page V7-T1-277**. Example: E34VFBL2.<sup>⑤</sup> Choose key removal position required for application from table on **Page V7-T1-277**. Add key removal code number to listed catalog number. Example: E34KFB2.