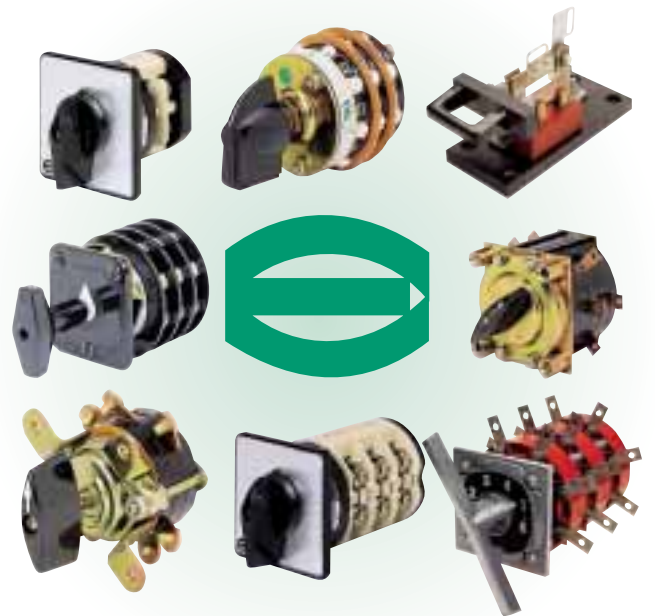




Switches For Industrial Applications



 **ELECTROSWITCH**

The Best Switches...

Backed by the industry's most knowledgeable and responsive engineering and customer service professionals...

Any way you want them...

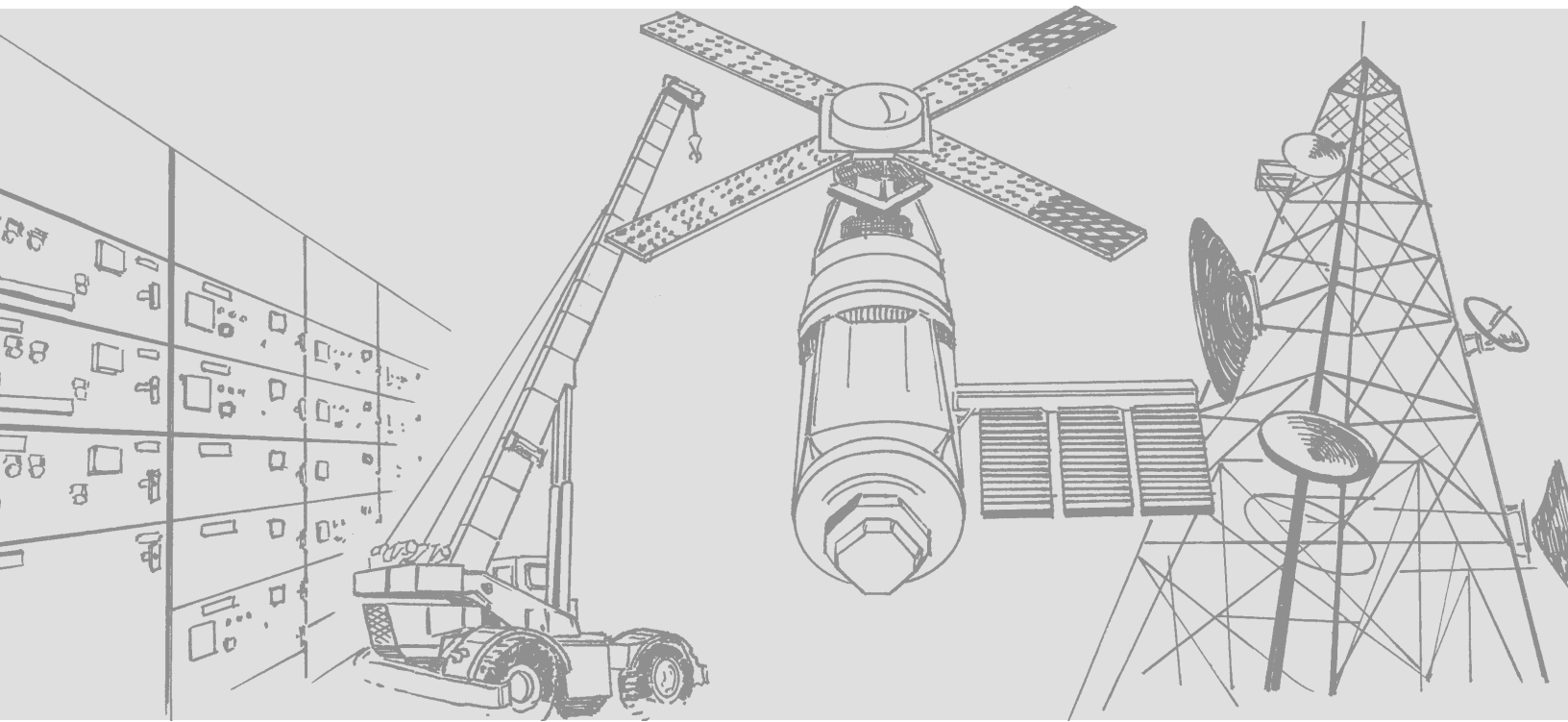
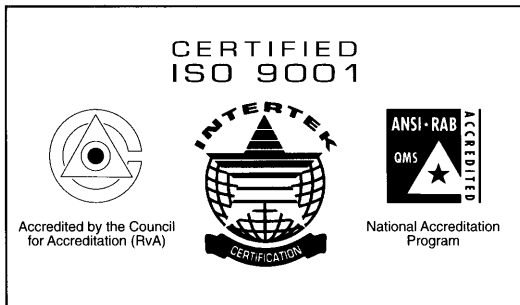
Delivered when you need them.



**NEVER
A DOUBT**

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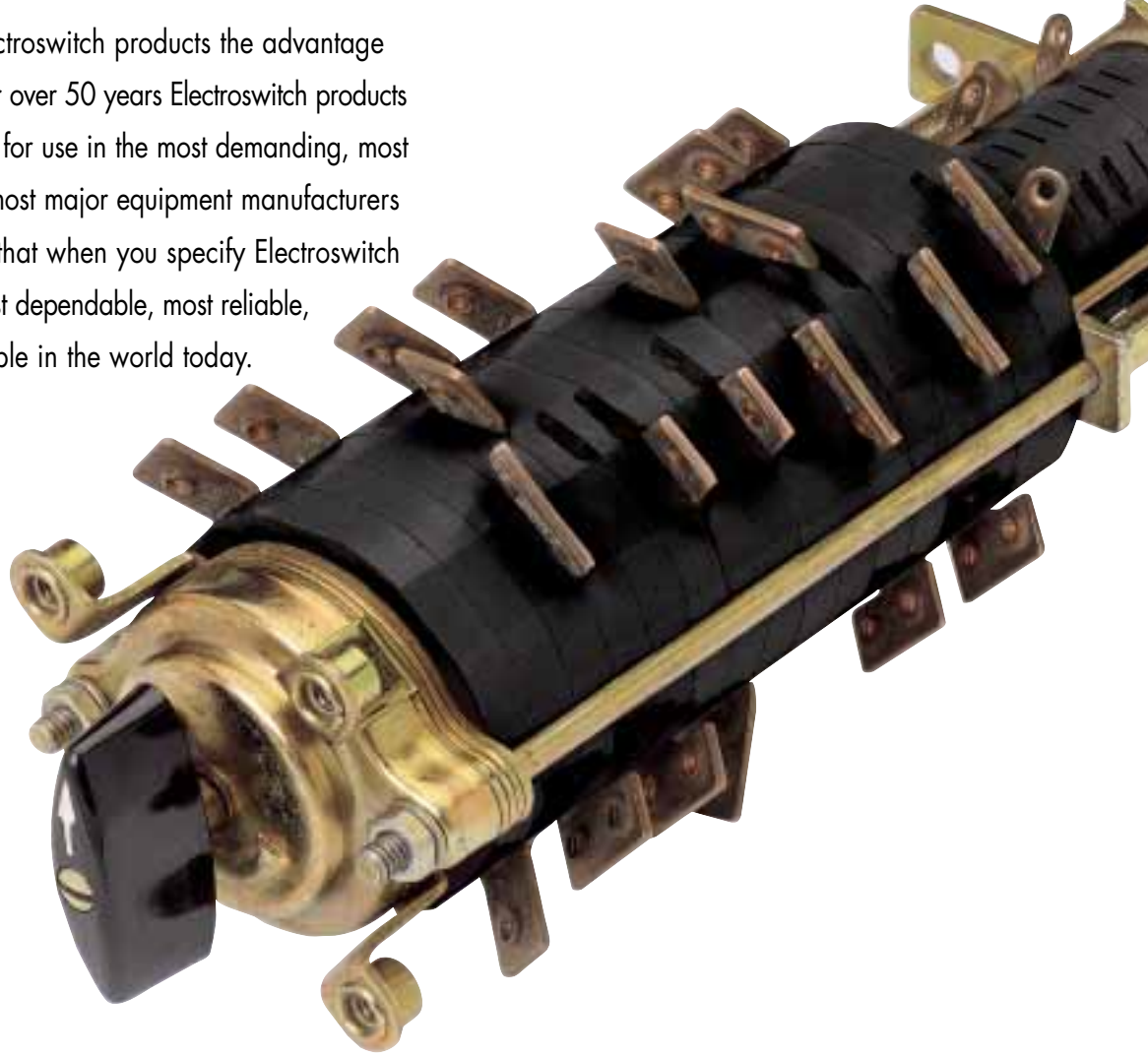


THE ADVANTAGE IS YOURS

When you choose Electroswitch products the advantage is always yours... For over 50 years Electroswitch products have been specified for use in the most demanding, most critical industrial applications by most major equipment manufacturers in the United States. They know that when you specify Electroswitch products you have chosen the most dependable, most reliable, and most proven products available in the world today.

With Electroswitch there is

Never a Doubt.





Electroswitch also offers the widest variety of industrial switches available today. There are virtually millions of different potential configurations to precisely meet applications.

We offer a choice of detent-, snap- and cam-action switches, as well as tap switches and knife switches to enhance your application.

The Advantage is Always Yours when you work with Electroswitch.



THE ADVANTAGE IS YOURS

You Get The Greatest Selection.

When we say we have a full line of products, we mean exactly that. Whatever your application, you will either find a standard switch to precisely match it or we will design and test a special switch to meet your needs. Applications range from nano amps to 10,000 amps and from microvolts to 13,800 volts. Switch sizes vary from 2 inches in diameter and a few ounces to more than 2 feet in diameter and 500 pounds.

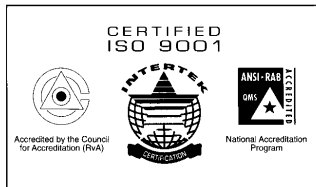
- *Detent Switches*
- *Snap Switches*
- *Cam Switches*
- *Tap Switches*
- *Knife Switches*

**A FULL LINE OF
POWER PRODUCTS**



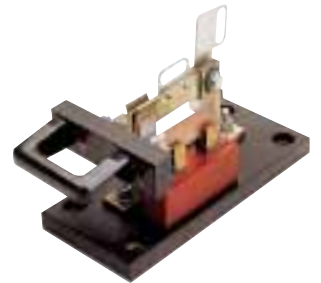
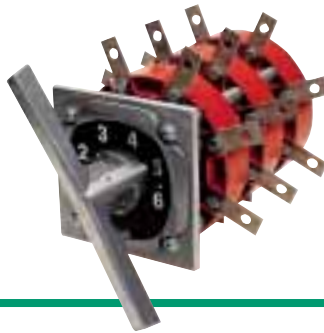
You Get The Highest Quality Product.

Electroswitch is on the Qualified Supplier List of most major equipment manufacturers in the United States. Our switches are specified for the most demanding duty in hi-shock military shipboard equipment, nuclear power plants and in all types of industrial, construction, and transportation equipment. Anywhere the ability to perform reliably under the most severe conditions of shock and vibration is essential, you will find Electroswitch products. At Electroswitch high quality is not a claim, but a fact proven through over fifty years of field performance.



We'll Meet Your Scheduling and Delivery Requirements.

We take great pride in meeting customer delivery requirements – no matter how stringent. In addition to orders by mail, phone, and fax, we also take orders electronically utilizing EDI. Use your MRP system to place orders direct. If your requirements change after placing your order, just give us a call; we can usually adjust our schedule to meet your new requirements.



THE ADVANTAGE IS YOURS

You Can Get Modifications Tailored To Your Needs.

Small Switches, Big Switches, Special Switches. Meeting customers' needs is our specialty. Tell us what you need, or explain your application to us.

Our application engineers will solve your problem precisely by modifying one of our standard models or creating something entirely new. You don't have to settle for almost right; we'll get it exactly right for you.



You Get Total Support.

We recognize our responsibility to you, our customers, and know that it goes far beyond simply delivering switches.

Application Assistance

More than simple assistance. We have a fully trained staff of applications professionals who are anxious to help you solve virtually any switching problems you may have.

Engineering

We have the industry's most knowledgeable, dedicated, and willing engineering staff waiting to go to work for you. Give us a call; we'll solve your switching problems.

Special Training

We won't leave you on your own. If you need any special training or other assistance, we're more than happy to provide this service.

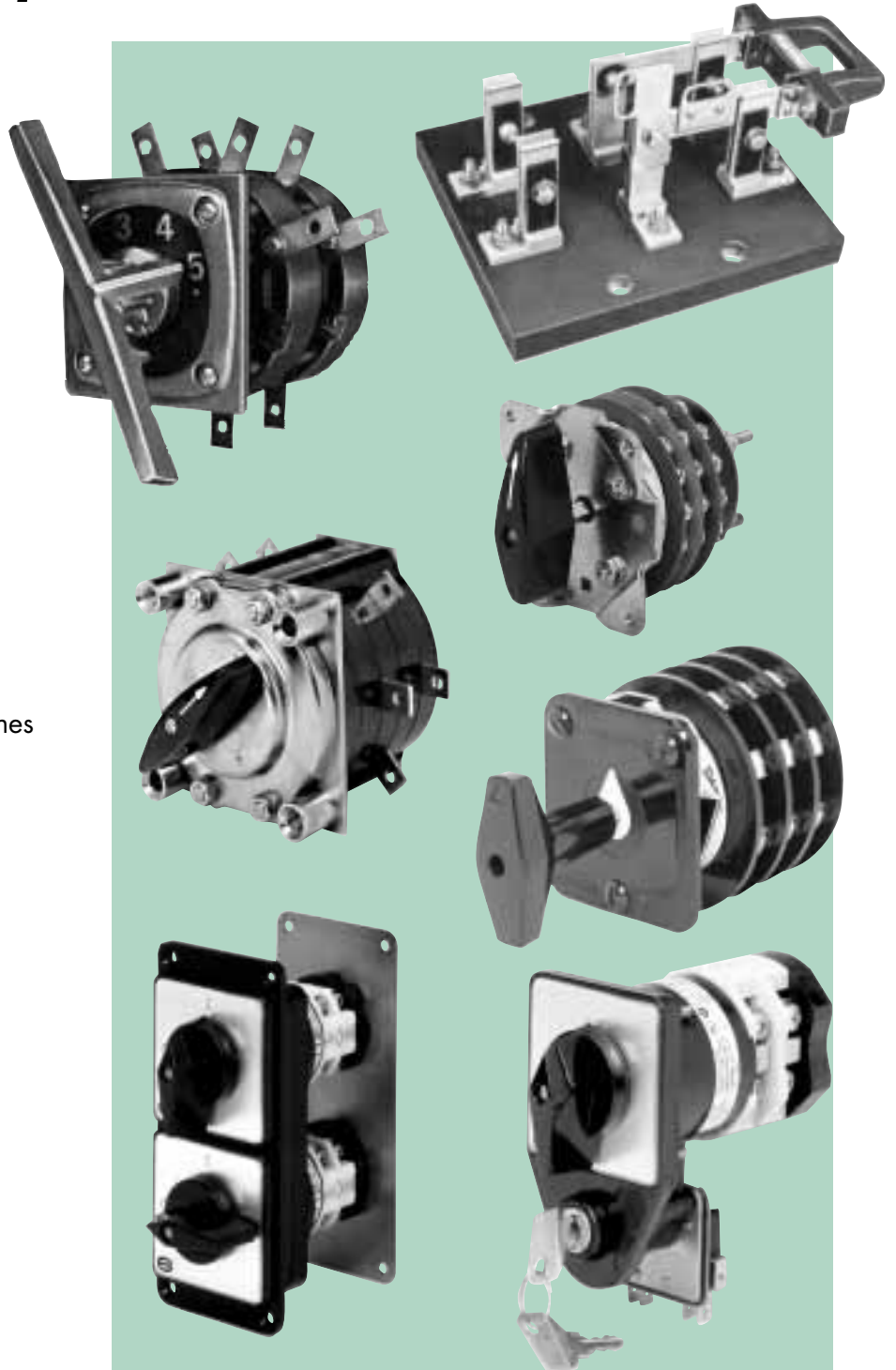


THE ADVANTAGE IS YOURS

Electroswitch...

Serving Industry With a Full Line of Rotary Switches for Virtually Every Application from A to Z

- A** Ammeter Switches
- B** Breaker Control Switches
- C** Cut-in/Cut-out Switches
- D** DC Current Switching
- E** Emergency Shut Off
- F** Forward/Reverse Switches
- G** Generator Control Switches
- H** Heater Control Switches
- I** Industrial Lighting
- J** Jet Engine Test Controls
- K** Key-operated Security Switches
- L** Light Rail Door Controls
- M** Marine Lighting
- N** NASA Space Station Power Switches
- O** Oven Controls
- P** Prison Door Controls
- Q** Quality Monitoring Controls
- R** Runway Lighting Controls
- S** Safety Interlocks
- T** Transit Car Master Controls
- U** UPS System Manual Bypass
- V** Voltmeter Switches
- W** Wheelchair Lift Controls
- X** X-ray Equipment On/Off
- Y** Yacht Power Transfer Switches
- Z** Zone Climate Control





SWITCHES FOR INDUSTRY



DETENT-ACTION ROTARY SWITCHES

Typical Applications

Generator Controls	Transit Track Switching	Industrial Panel Control
Runway Lighting	Ammeters	Tap Switch
Compressor Control	Silo Controls	Operating Room Lights
Prison Door Control	Transmission Controls	Railroad Crossing Equipment
Naval Ship Rudder Control	Large Gen-Sets	Telephone Equipment
Interlock Transit Cars	Industrial Lighting Control	Dairy Equipment

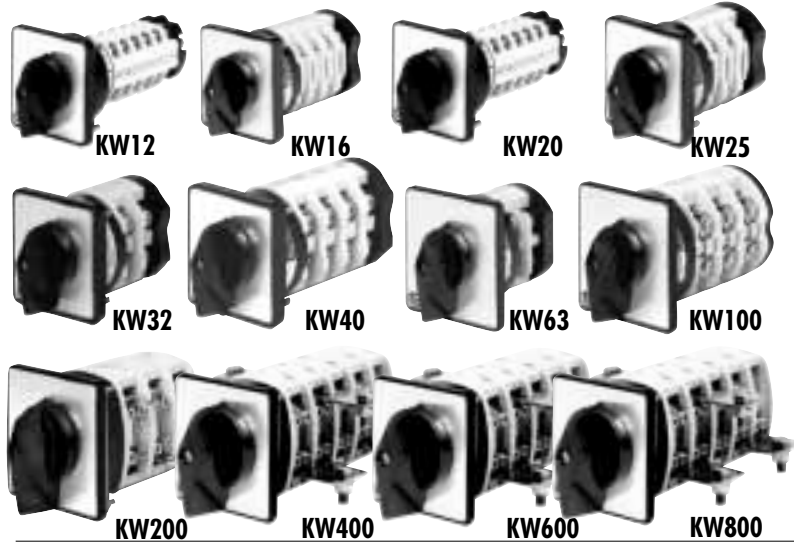


SPECIALTY SWITCHES

SNAP-ACTION ROTARY SWITCHES

Typical Applications

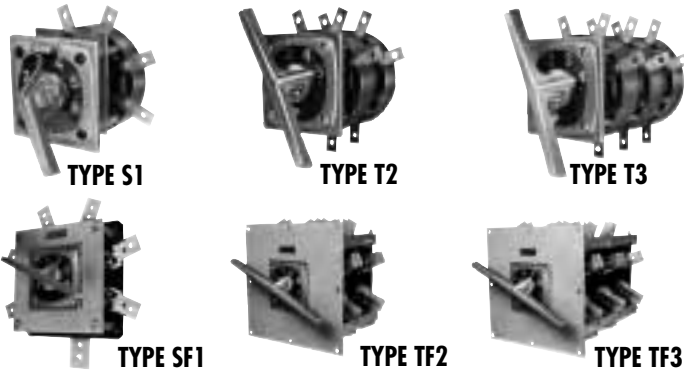
Mining Equipment	Train Warning Lights	Ship to Shore
Transit Car Air Conditioning	Telephone Equipment	Test Equipment
Welding Equipment	Soil Testing Equipment	Bypass Switch
Instrument Controls	Battery Maintenance Switch	DC Voltage Disconnect
Industrial Overhead Magnets	Flame Cutting Machines	Transformer Tap Selection
UPS Systems	Power Source Selector	Stage Lighting



CAM-ACTION ROTARY SWITCHES

Typical Applications

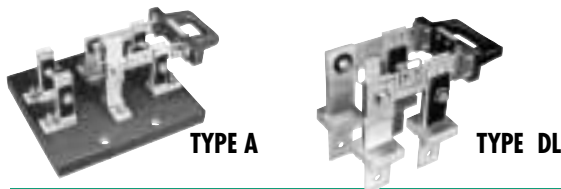
Crane Controls	RV AC & Ventilation Controls	Refrigeration Trailers
Meter Switches	Medical Equipment	Packaging Equipment
Oxygen Equipment Controls	Scaffolding	Gen-Set Controls
Generator Controls	UPS Equipment	Bypass Switches
Industrial Panels	Motor Controls	
Communications Equipment	Motor Operated Switch	
Ventilation Equipment	Bus Controls	



TAP SWITCHES

Typical Applications

Heating Elements in Silicon Reactors	Test Equipment
Furnace Tap Switches	Welding Equipment
Selector Tap Switches for Transformers	



KNIFE SWITCHES

Typical Applications

Disconnect Switches in Steel Industry	Disconnect Switches for Ship Board
---------------------------------------	------------------------------------



DETENT-ACTION ROTARY SWITCHES OVERVIEW

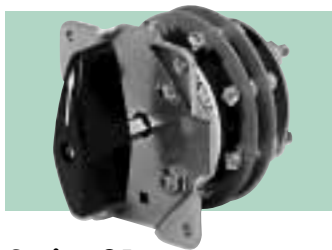
Features

- Up to 16 Positions
- Up to 75 Poles (More if Gear Operated Drive is Utilized)
- Up to 30 Amperes Continuous Rating
- UL Recognized & CSA Certified
- Positive Detent Action
- Silver to Silver Contacting
- Most are Available With the Following Features:
 - Waterproof Mount
 - Push-to-Turn
 - Key Operated
 - Spring Return
 - Solenoid Lock
 - Key Lock
 - Gear Operated
 - Solenoid Operated
- Double-Sided Wiping Contacts for Low Contact Resistance and Shock Proof Contacting
- All Contact Making and Breaking Takes Place in Fully Enclosed Decks

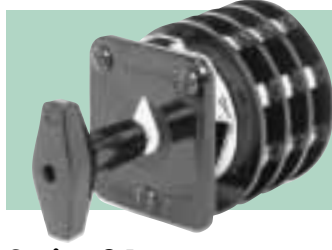
Choose the switch that best suits your application

Electroswitch offers a wide variety of Detent-Action Rotary Switches designed specifically to satisfy the most stringent requirements in Industrial applications. In fact, we offer the world's most complete, tested, and proven line of Detent-Action Rotary Switches.

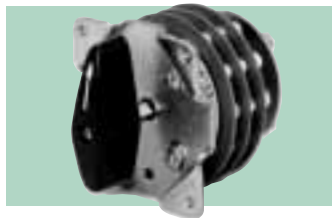
The following is a quick description of each series. It is designed to help you select the one that is right for your application.



Series 21



Series 24



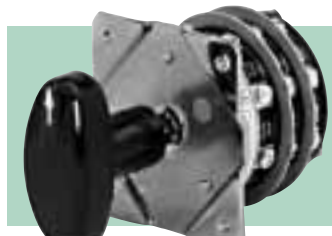
Series 25



Series 31 (Single Hole Mount)



Series 28



Series 31B (Four Hole Mount)

Detent-Action Switches - Selector Guide

CHARACTERISTICS	SERIES 21	SERIES 24	SERIES 25	SERIES 28	SERIES 31A	SERIES 31B
SECTIONS	1-30	1-10	1-25	1-15	1-10	1-10
POLES	1-60	1-20	1-75	1-30	1-20	1-20
POSITIONS	2-8	2-8	2-12	2-16	2-8	2-8
DETENT ANGLE	45°	45°	30°	22.5°	45°	45°
ELECTRICAL RATINGS						
Continuous Rating	15A-600V	30A-600V	10A-600V	5A-600V	15A-600V	15A-600V
Interrupting Current						
120VAC	15A	20A	10A	5A	10A	10A
240VAC	7.5A	15A	5A	3A	5A	5A
600VAC	4A	6A	3A	2A	3A	3A
24VDC	10A		7.5A	5A	5A	5A
125VDC	2A	3A			1A	1A
Max. Breaking Ability	30A		75A	15A	60A	60A
Max. Making Ability	30A		75A	15A	60A	60A
Momentary Current						
3 Seconds	140A	200A	75A		90A	90A
30 Seconds	45A	75A	30A		35A	35A
60 Seconds	35A	60A	25A		25A	25A
Overload Current (50 Operations)						
120VAC	30A	95A	75A	15A	60A	60A
240VAC		65A	20A		45A	45A
600VAC		35A			20A	20A
24VDC					30A	30A
125VDC					15A	15A
Dielectric Strength	2200V rms	2200V rms	2200V rms	2200V rms	2200V rms	2200V rms
Insulation Resistance	100 megohms	100 megohms	100 megohms	100 megohms	100 megohms	100 megohms
Contact Resistance	10 milliohms	10 milliohms	10 milliohms	10 milliohms	10 milliohms	10 milliohms
MOUNTINGS						
Single Hole					Yes	
3-Hole		Yes				
4-Hole	Yes		Yes	Yes		Yes
Waterproof Mount	Yes	Yes	Yes	Yes	Yes	
LOCKING FEATURES						
Key Lock Handle	Yes	Yes	Yes	Yes		
Push-to-turn	Yes	Yes	Yes	Yes		
Solenoid Lock	Yes	Yes	Yes	Yes		Yes
OPTIONAL FEATURES						
Key Operated		Yes			Yes	
Solenoid Operated		Yes				Yes
Ganged Gear Operated	Yes	Yes	Yes	Yes		
Spring Return	Yes	Yes	Yes	Yes	Yes	Yes
APPROVALS						
UL Recognized	Yes	Yes	Yes	Yes	Yes	Yes
CSA Certified	Yes	Yes	Yes	Yes	Yes	Yes



SERIES 21

DETENT-ACTION ROTARY SWITCHES

Features

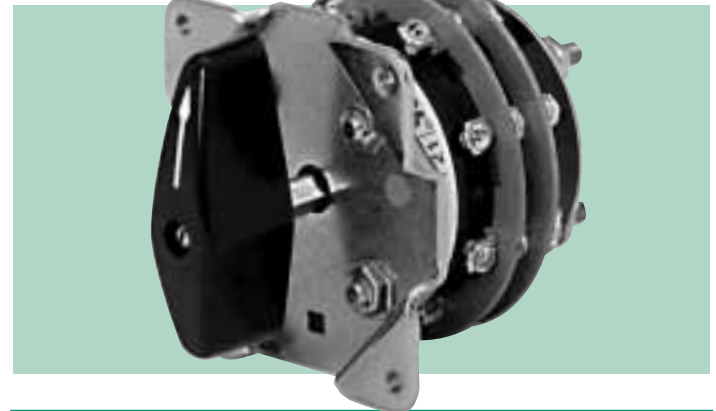
- Double-Sided, Double-Wiping, Knife-Type Rotary Contacts
- Silver Contact Surfaces for Long, Reliable Life
- Terminal Screws — Easy Installation
- Four Hole Mount

Control Switch Special Features

- Spring Return to Normal (Vertical) Position

Instrument Switch Special Features

- Make-Before-Break (Shorting Contacts)
- Common Input Tap Switch Arrangement — Sequentially Connected to Several Lines Using the Same Switching Deck
- Positive Positioning, Maintained Action Detent Mechanism



Electrical Specifications

Interrupt Ratings

- 15A/120VAC
- 4A/600VAC
- 7.5A/240VAC
- Overload Current (50 operations): 30A/125VAC Resistive
- Voltage Breakdown: 1200V rms minimum
- Insulation Resistance: 100 Megohms minimum
- Contacts Resistance: 10 milliohms maximum

Mechanical Specifications

Sections	1 to 30
Poles	1 to 60
Positions	8; Adjustable Stops for 2–8 Position Rotation
Contacts	Break-Before-Make (Non-Shorting); Make-Before-Break (Shorting)
Action	45° Positive Detent Indexing
Mounting	4-Hole
Panel Thickness	3/16" Max. Standard
Rotor Contacts	Silver Plated Phosphor-bronze, Double Grip
Stationary Contacts	Silver Plated Copper, w/Integral Screw Type Terminals
Construction	Contacts Enclosed in Molded-phenolic Disks

Approvals

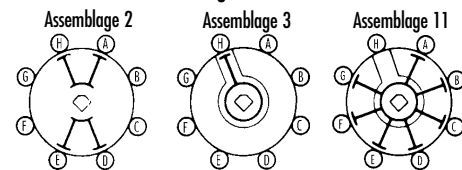
- UL File No. E18174
- CSA File #LR20743

Variations

For Key Lock Handle, Key Operated Handle, Solenoid Lock Handle, Push-to-Turn, Spring Return or Waterproof Mount Switches please see page 18.

ORDERING INFORMATION -

Four Hole Mount Assemblies



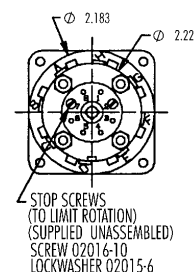
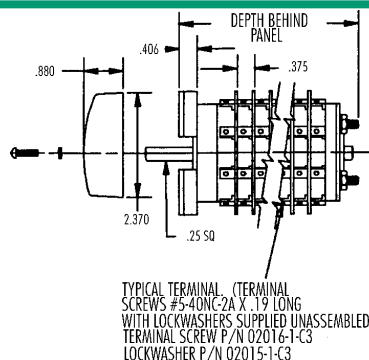
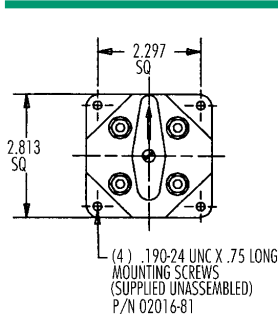
Note 1: Nominal torques, weights, and depth behind panel are listed below.

Note 2: Assemblies are shown with handle in 0° position (12 o'clock).

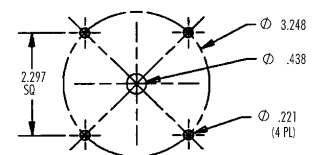
Model No. **21**

Series	Handle	Shorting
Assemblage	A = Flush	Blank = No
<i>Standard 2 and 3</i>	B = Oval Shank	S = Yes
<i>Optional (With Factory Approval) 1, 6, 7, 8, and 10</i>	C = Round Knurled	
<i>For Assemblages 10 and 11 Consult Factory</i>	D = Pistol Grip	

Matrix Code	No. of Sections	Weight (lbs)	Torque (lbs/in)	Depth Behind Panel
01 =	1	1.1	8	2.00
02 =	2	1.2	9	2.34
03 =	3	1.3	10	2.72
04 =	4	1.4	11	3.09
05 =	5	1.5	12	3.47
06 =	6	1.6	13	3.72
07 =	7	1.7	14	4.22
08 =	8	1.8	15	4.59
09 =	9	1.9	16	4.97
10 =	10	2.0	17	5.34
11 =	11	2.1	18	5.59
12 =	12	2.2	19	6.09
13 =	13	2.3	20	6.47
15 =	15	2.8	29	7.72
20 =	20	3.4	34	9.47
25 =	25	4.0	39	11.47
30 =	30	4.9	57	14.09



PANEL DRILLING DIMENSIONS



NOTE: FOR WATERPROOF MOUNTING.
 Ø .64 CENTER HOLE
 Ø .201 MOUNTING HOLES (4 PL)
 DO NOT CHAMFER MOUNTING HOLES.



SERIES 25

DETENT-ACTION ROTARY SWITCHES

Features

- Double-Sided, Double-Wiping, Knife-Type Rotary Contacts
- Silver Contact Surfaces for Long, Reliable Life
- Terminal Screws — Easy Installation
- Four Hole Mount

Control Switch Special Features

- Spring Return to Normal (Vertical) Position

Instrument Switch Special Features

- Make-Before-Break (Shorting Contacts)
- Common Input Tap Switch Arrangement — Sequentially Connected to Several Lines Using the Same Switching Deck
- Positive Positioning, Maintained Action Detent Mechanism



Electrical Specifications

Interrupt Ratings

- 10A/120VAC
- 5A/240VAC
- 3A/600VAC
- Overload Current (50 operations): 22A/125VAC Resistive
- Voltage Breakdown: 1200V rms minimum
- Insulation Resistance: 100 Megohms minimum
- Contacts Resistance: 10 milliohms maximum

Mechanical Specifications

Sections	1 to 25
Poles	1 to 75
Positions	12; Adjustable Stops for 2–12 Position Rotation
Contacts	Break-Before-Make (Non-Shorting); Make-Before-Break (Shorting)
Action	30° Positive Detent Indexing
Mounting	4-Hole
Panel Thickness	3/16" Max. Standard
Rotor Contacts	Silver Plated Phosphor-bronze, Double Grip
Stationary Contacts	Silver Plated Copper, w/Integral Screw Type Terminals
Construction	Contacts Enclosed in Molded-phenolic Disks

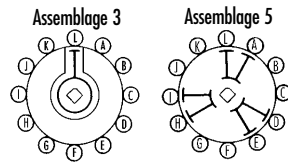
Approvals

- UL File No. E18174
- CSA File #LR20743

Variations

For Key Lock Handle, Solenoid Lock Handle, Push-to-Turn, Spring Return or Waterproof Mount Switches please see page 18.

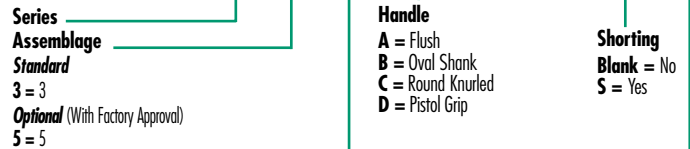
ORDERING INFORMATION -



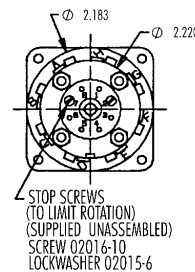
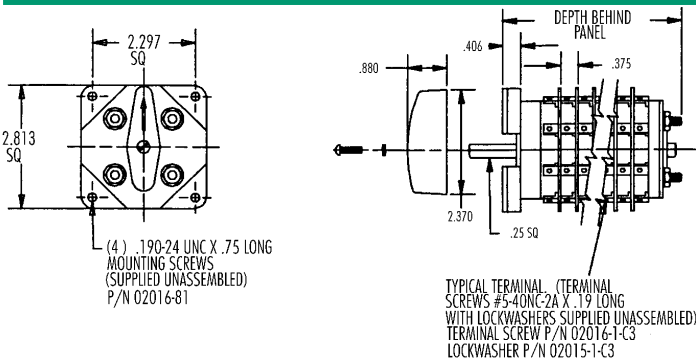
Note 1: Nominal torques, weights, and depth behind panel are listed below.

Note 2: Assemblages are shown with handle in 0° position (12 o'clock).

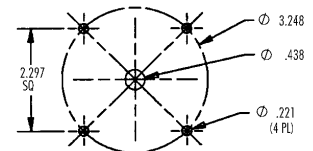
Model No. **25** □ □ □ □



Matrix Code	No. of Sections	Weight (lbs)	Torque (lbs/in)	Depth Behind Panel
				4-Hole
01 =	1	1.1	9	1.97
02 =	2	1.2	10	2.34
03 =	3	1.3	11	2.72
04 =	4	1.4	12	3.09
05 =	5	1.5	13	3.47
06 =	6	1.6	14	3.84
07 =	7	1.7	15	4.22
08 =	8	1.8	16	4.59
09 =	9	1.9	17	4.97
10 =	10	2.0	18	5.34
11 =	11	2.1	19	5.59
12 =	12	2.2	20	6.09
13 =	13	2.3	21	6.47
14 =	14	2.4	22	6.84
15 =	15	2.8	30	7.72
20 =	20	3.4	35	9.97
25 =	25	4.0	40	11.47



PANEL DRILLING DIMENSIONS



NOTE: FOR WATERPROOF MOUNTING.
Ø .64 CENTER HOLE
Ø .201 MOUNTING HOLES (4 PL)
DO NOT CHAMFER MOUNTING HOLES.



SERIES 28

DETENT-ACTION ROTARY SWITCHES

Features

- Double-Sided, Double-Wiping, Knife-Type Rotary Contacts
- Silver Contact Surfaces for Long, Reliable Life
- Terminal Screws — Easy Installation
- Four Hole Mount

Special Features

- Spring Return to Normal (Vertical) Position

Instrument Switch Special Features

- Make-Before-Break (Shorting Contacts)
- Common Input Tap Switch Arrangement — Sequentially Connected to Several Lines Using the Same Switching Deck
- Positive Positioning, Maintained Action Detent Mechanism



Electrical Specifications

Interrupt Ratings

- 5A/120VAC
- 3A/240VAC
- 2A/600VAC
- Overload Current (50 operations): 15A/125VAC Resistive
- Voltage Breakdown: 1200V rms minimum
- Insulation Resistance: 100 Megohms minimum
- Contacts Resistance: 10 milliohms maximum

Mechanical Specifications

Sections	1 to 15
Poles	1 to 30
Positions	16; Adjustable Stops for 2–16 Position Rotation
Contacts	Break-Before-Make (Non-Shorting); Make-Before-Break (Shorting)
Action	22.5° Positive Detent Indexing
Mounting	4-Hole
Panel Thickness	3/16" Max. Standard
Rotor Contacts	Silver Plated Phosphor-bronze, Double Grip
Stationary Contacts	Silver Plated Copper, w/Integral Screw Type Terminals
Construction	Contacts Enclosed in Molded-phenolic Disks

Approvals

- UL File No. E18174
- CSA File #LR20743

Variations

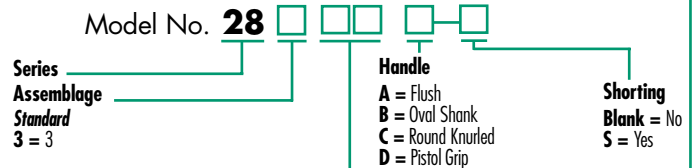
For Key Lock Handle, Solenoid Lock Handle, Push-to-Turn, Spring Return or Waterproof Mount Switches please see page 18.

ORDERING INFORMATION -

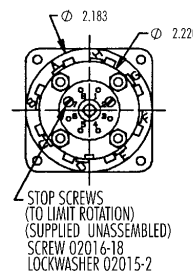
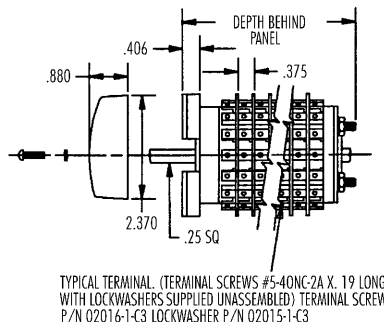
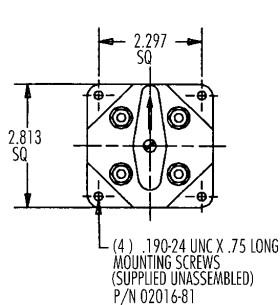


Note 1: Nominal torques, weights, and depth behind panel are listed below.

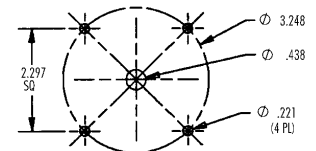
Note 2: Assemblages are shown with handle in 0° position (12 o'clock).



Matrix Code	No. of Sections	Weight (lbs)	Torque (lbs/in)	Depth Behind Panel
01 =	1	1.1	9	1.97
02 =	2	1.2	10	2.34
03 =	3	1.3	11	2.72
04 =	4	1.4	12	3.09
05 =	5	1.5	13	3.47
06 =	6	1.6	14	3.84
07 =	7	1.7	15	4.22
08 =	8	1.8	16	4.59
09 =	9	1.9	17	4.97
10 =	10	2.3	25	5.72
11 =	11	2.4	26	6.09
12 =	12	2.5	27	6.47
13 =	13	2.6	28	6.84
14 =	14	2.7	29	7.34
15 =	15	2.8	30	7.72



PANEL DRILLING DIMENSIONS



NOTE: FOR WATERPROOF MOUNTING.
∅ .64 CENTER HOLE
∅ .201 MOUNTING HOLES (4 PL)
DO NOT CHAMFER MOUNTING HOLES.



SERIES 24

DETENT-ACTION ROTARY SWITCHES

Features

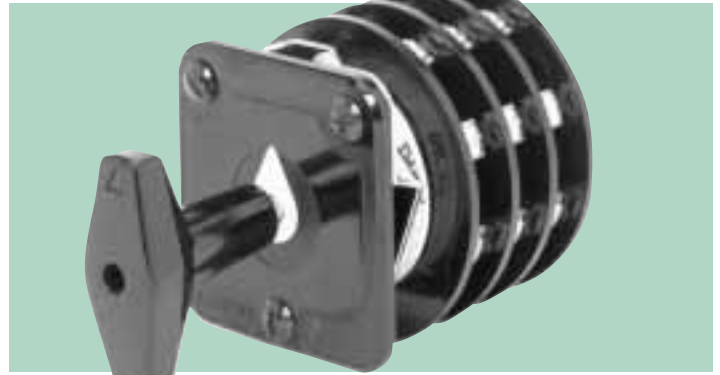
- Double-Sided, Double-Wiping, Knife-Type Rotary Contacts
- Silver Contact Surfaces for Long, Reliable Life
- Terminal Screws — Easy Installation
- Three Hole Mount

Control Switch Special Features

- Spring Return to Normal (Vertical) Position

Instrument Switch Special Features

- Make-Before-Break (Shorting Contacts)
- Common Input Tap Switch Arrangement — Sequentially Connected to Several Lines Using the Same Switching Deck
- Positive Positioning, Maintained Action Detent Mechanism



Electrical Specifications

Interrupt Ratings

- 20A/120VAC
- 15A/240VAC
- 6A/600VAC
- 3A/125VDC
- 1A/250VDC

Overload Current (50 operations):

- 95A/125VAC
- 65A/240VAC
- 35A/600VAC

Mechanical Specifications

Sections	1 to 10
Poles	1 to 20
Positions	8; Adjustable Stops for 2–8 Position Rotation
Contacts	Break-Before-Make (Non-Shorting); Make-Before-Break (Shorting)
Action	45° Positive Detent Indexing
Mounting	3-Hole
Panel Thickness	3/16" Max. Standard
Rotor Contacts	Silver Plated Phosphor-bronze, Double Grip
Stationary Contacts	Silver Plated Copper, w/Integral Screw Type Terminals
Construction	Contacts Enclosed in Molded-phenolic Disks

Approvals

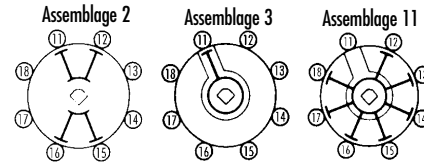
- UL File No. E18174
- CSA File #LR20743

Variations

For Key Lock Handle, Spring Return or Waterproof Mount Switches please see page 18.

ORDERING INFORMATION -

Four Hole Mount Assemblies



Note 1: Nominal torques, weights, and depth behind panel are listed below.

Note 2: Assemblies are shown with handle in 0° position (12 o'clock).

Model No. **24**

Series

Assemblage

Standard 2 and 3

Optional (With Factory Approval) 1, 7, 8, and 10

For Other Assemblages Consult Factory

Handle

B = Oval Shank

C = Round Knurled

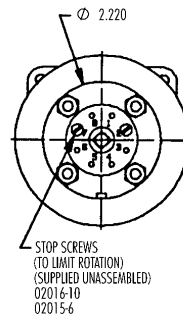
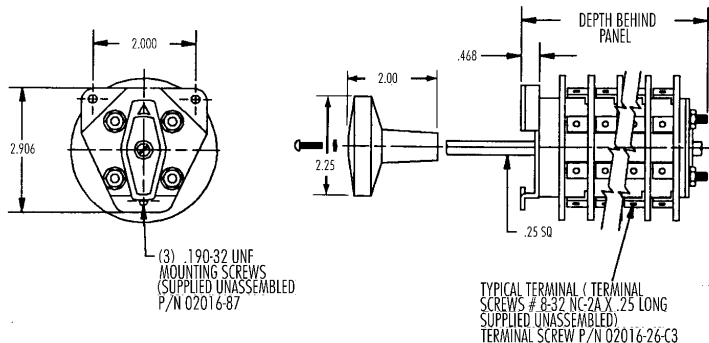
D = Pistol Grip

Shorting

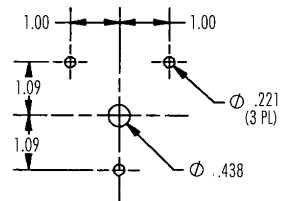
Blank = No

S = Yes

Matrix Code	No. of Sections	Weight (lbs)	Torque (lbs/in)	Depth Behind Panel
01 =	1	1.1	8	2.41
02 =	2	1.2	9	2.78
03 =	3	1.3	10	3.53
04 =	4	1.4	11	4.28
05 =	5	1.5	12	4.66
06 =	6	1.6	13	5.41
07 =	7	1.7	14	6.16
08 =	8	1.8	15	6.53
09 =	9	1.9	16	7.41
10 =	10	2.0	17	8.03



PANEL DRILLING DIMENSIONS



NOTE: FOR WATERPROOF MOUNTING



SERIES 31 SINGLE HOLE DETENT-ACTION ROTARY SWITCHES

Features

- Double-Sided, Double-Wiping, Knife-Type Rotary Contacts
- Silver Contact Surfaces for Long, Reliable Life
- Terminal Screws — Easy Installation
- Single Hole Mount

Control Switch Special Features

- Spring Return to Normal (Vertical) Position

Instrument Switch Special Features

- Make-Before-Break (Shorting Contacts)
- Common Input Tap Switch Arrangement — Sequentially Connected to Several Lines Using the Same Switching Deck
- Positive Positioning, Maintained Action Detent Mechanism



Electrical Specifications

Interrupt Ratings

- 10A/125VAC
- 5A/240VAC
- 3A/600VAC
- 5A/30VDC
- 1A/125VDC
- Overload Current (50 operations): 60A/125VAC Resistive
- Voltage Breakdown: 2000V rms minimum
- Insulation Resistance: 100 Megohms minimum
- Contacts Resistance: .01 ohms maximum

Mechanical Specifications

Sections	1 to 10
Poles	1 to 20
Positions	8; Adjustable Stops for 2–8 Position Rotation
Contacts	Break-Before-Make (Non-Shorting); Make-Before-Break (Shorting)
Action	45° Positive Detent Indexing
Mounting	Single Hole
Panel Thickness	3/16" Max. Standard
Rotor Contacts	Silver Plated Phosphor-bronze, Double Grip
Stationary Contacts	Silver Plated Copper, w/Integral Screw Type Terminals
Construction	Contacts Enclosed in Molded-phenolic Disks

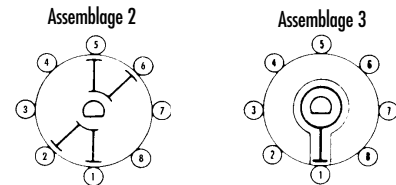
Approvals

- UL File No. E18174
- CSA File #LR20743

Variations

For Key Operated Handle or Spring Return Switches please see page 18.

ORDERING INFORMATION -



Note 1: Nominal torques, weights, and depth behind panel are listed below.

Note 2: Assemblages are shown with handle in 0° position (12 o'clock).

Model No. **31**

Series _____

Assemblage _____

Standard 2 and 3

Optional (With Factory Approval) 1, 6, 7, 8, and 10

For Assemblages 10 and 11 Consult Factory

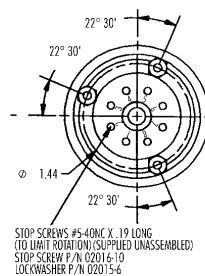
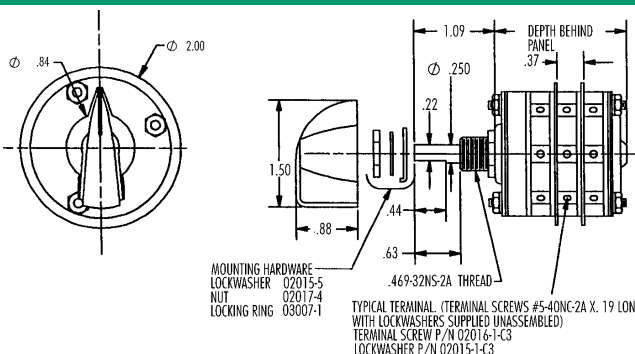
Mounting Style/Handle _____

A = Single Hole/Flush

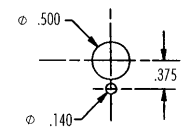
Shorting Blank = No

S = Yes

Matrix Code	No. of Sections	Weight (lbs)	Torque (lbs/in)	Depth Behind Panel	
				2	Assemblage 3
01 =	1	5	6	1.16	1.16
02 =	2	6	7	1.53	1.53
03 =	3	7	8	1.91	1.91
04 =	4	8	9	2.28	2.28
05 =	5	9	10	2.66	2.66
06 =	6	10	11	3.03	3.03
07 =	7	11	14	4.13	3.41
08 =	8	13	15	4.53	4.53
09 =	9	14	16	4.91	4.91
10 =	10	15	17	5.28	5.28



PANEL DRILLING DIMENSIONS





SERIES 31B FOUR HOLE DETENT-ACTION ROTARY SWITCHES

Features

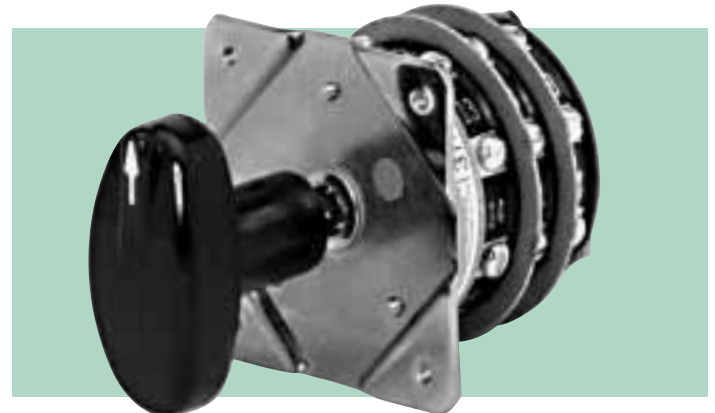
- Double-Sided, Double-Wiping, Knife-Type Rotary Contacts
- Silver Contact Surfaces for Long, Reliable Life
- Terminal Screws — Easy Installation
- Four Hole Mount

Control Switch Special Features

- Spring Return to Normal (Vertical) Position

Instrument Switch Special Features

- Make-Before-Break (Shorting Contacts)
- Common Input Tap Switch Arrangement — Sequentially Connected to Several Lines Using the Same Switching Deck
- Positive Positioning, Maintained Action Detent Mechanism



Electrical Specifications

Interrupt Ratings

- 10A/125VAC
- 5A/240VAC
- 3A/600VAC
- 5A/30VDC
- 1A/125VDC
- Overload Current (50 operations): 60A/125VAC Resistive
- Voltage Breakdown: 2000V rms minimum
- Insulation Resistance: 100 Megohms minimum
- Contacts Resistance: .01 ohms maximum

Mechanical Specifications

Sections	1 to 10
Poles	1 to 20
Positions	8; Adjustable Stops for 2–8 Position Rotation
Contacts	Break-Before-Make (Non-Shorting); Make-Before-Break (Shorting)
Action	45° Positive Detent Indexing
Mounting	4-Hole
Panel Thickness	3/16" Max. Standard
Rotor Contacts	Silver Plated Phosphor-bronze, Double Grip
Stationary Contacts	Silver Plated Copper, w/Integral Screw Type Terminals
Construction	Contacts Enclosed in Molded-phenolic Disks

Approvals

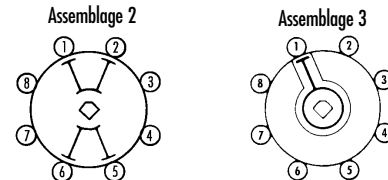
- UL File No. E18174
- CSA File #LR20743

Variations

For Spring Return Switches please see page 18.

ORDERING INFORMATION -

Four Hole Mount Assemblies



Note 1: Nominal torques, weights, and depth behind panel are listed below.

Note 2: Assemblages are shown with handle in 0° position (12 o'clock).

Model No. **31** □ □ □ □

Series

Assemblage

Standard 2 and 3

Optional (With Factory Approval) 1, 6, 7, and 8

For Assemblages 10 and 11 Consult factory

Mounting Style/Handle

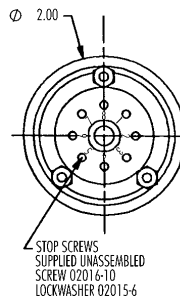
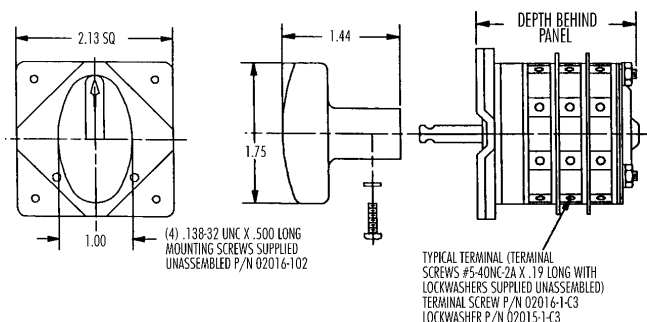
B = Four Hole/Oval Shank

C = Four Hole/Round Knurled

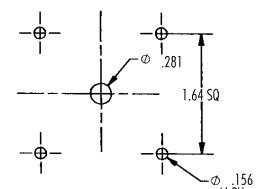
D = Four Hole/Pistol Grip

Shorting
Blank = No
S = Yes

Matrix Code	No. of Sections	Weight (lbs)	Torque (lbs/in)	Depth Behind Panel
				4-Hole
01 =	1	5	6	1.25
02 =	2	6	7	1.63
03 =	3	7	8	2.00
04 =	4	8	9	2.38
05 =	5	9	10	2.75
06 =	6	10	11	3.13
07 =	7	11	14	3.75
08 =	8	13	15	4.13
09 =	9	14	16	4.50
10 =	10	15	17	4.88



PANEL DRILLING DIMENSIONS





DETENT-ACTION ROTARY SWITCHES

CONTACT ASSEMBLAGES AND DIAGRAMS

Contact Assemblages

Series 21, 24, & 31 contact diagrams are shown for 8 position switches. Series 25 has 12 and Series 28 has 16, and have similar contact diagrams with more positions.

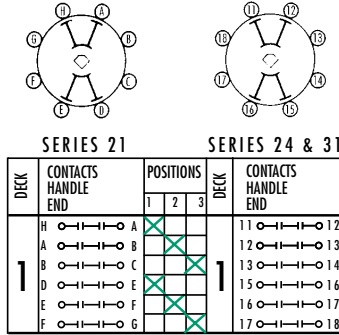
Series 21, 25, & 28 have alphabetical markings of terminals. Series 24 and 31 (both single and 4-hole mounts) have the numerical terminal markings as shown.

Contacting variations that can be used with all Detent Switches are shown in the assemblage diagrams below. The handle is shown in the 12 o'clock (0°) position. Either make-before-break (shorting) or break-before-make (non-shorting) contacts are available except as noted.

STANDARD CONTACT ASSEMBLAGES AND DIAGRAMS

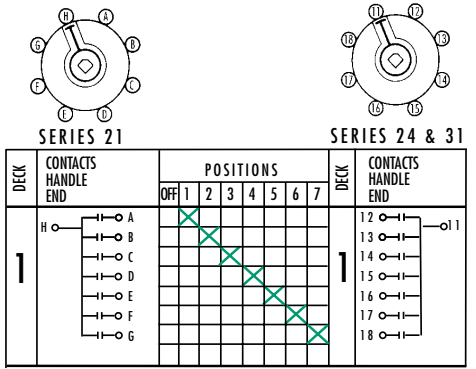
Number 2

Two poles per section; double-break switching. This assemblage is normally limited to three positions.



Number 3

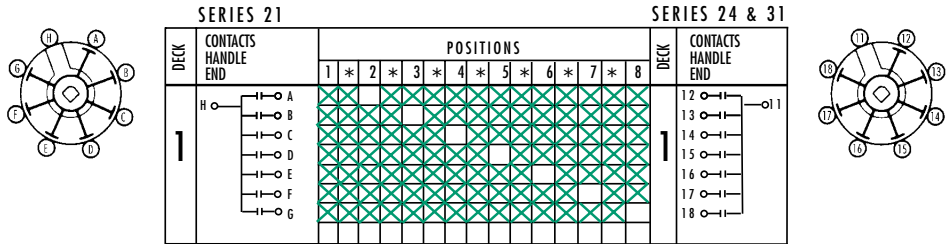
One pole per section; provides "OFF" and 7 tap positions.



Number 11

Allows any one circuit to be opened while the rest are closed; make-before-break (shorting) only.

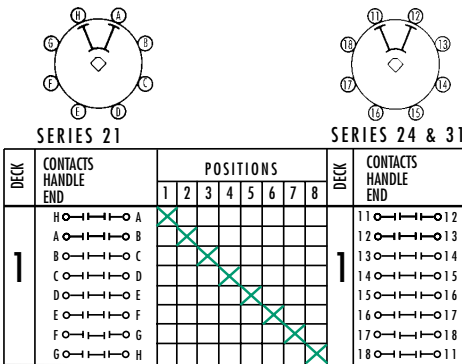
This assemblage is not available in Series 28.



OPTIONAL CONTACT ASSEMBLAGES AND DIAGRAMS (Consult Factory for More Details)

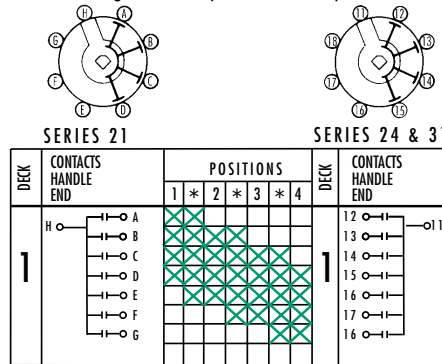
Number 1

One pole per section; double-break switching.



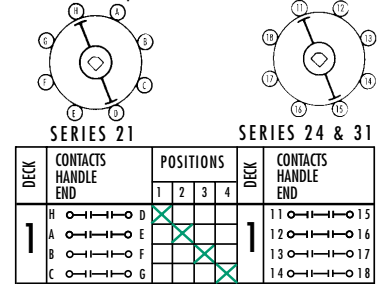
Number 6

Cumulative tap switch; make-before-break (shorting) only. This assemblage is normally limited to four positions.



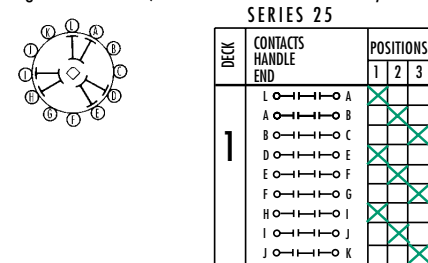
Number 7

Provides double-break switching. This assemblage is normally limited to four positions.



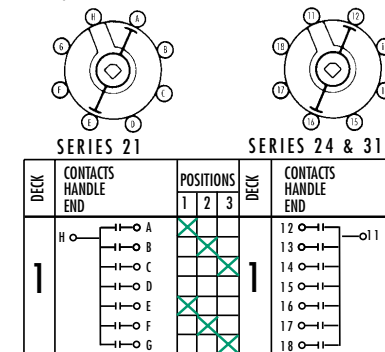
Number 5

Three poles per section; double-break switching. This assemblage is available in, and shown for Series 25 only.



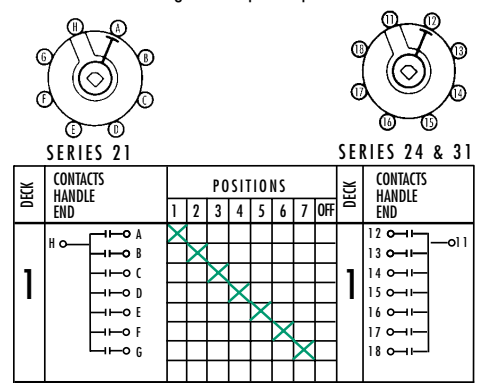
Number 8

Allows pairs of circuits to be fed from a common source.



Number 10

Same as Assemblage 3 except first position is "ON".



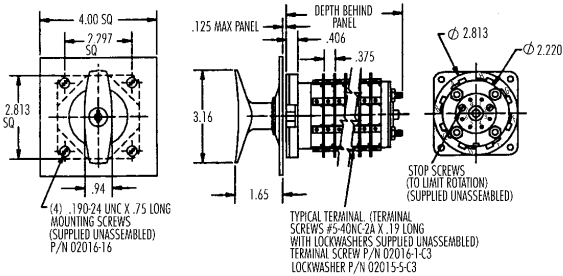


DETENT-ACTION ROTARY SWITCHES

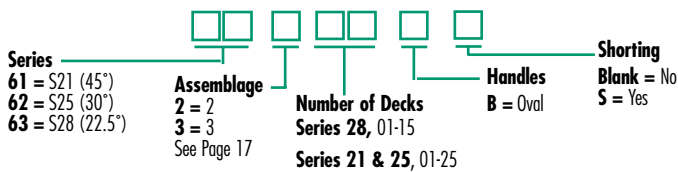
SPECIAL CONFIGURATIONS

Key Lock Handle

- Locks in Vertical Position
- Key Removable when Locked
- All Units have Same Key Code
- 4" Square Black Nameplate



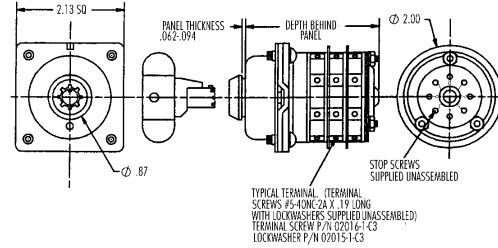
ORDERING INFORMATION -



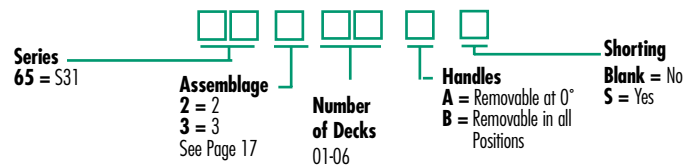
Note: For Series 24 Consult Factory

Key Operated Handle

- Key Removable in 0° or all Positions
- All Series 31 Key Operated Switches are Single Hole Mount
- All Series 31 Key Operated Switches are Single Hole Mount

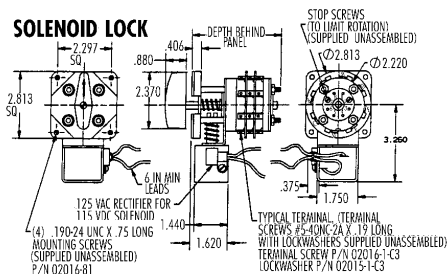


ORDERING INFORMATION -

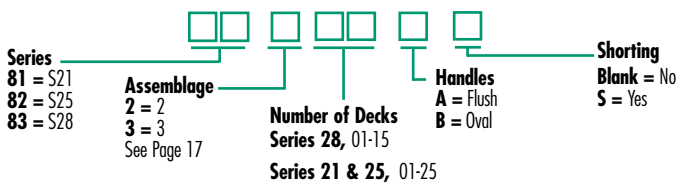


Solenoid Lock Handle

- Switch Can Be Turned Only when Solenoid is Energized (110-125VAC Input)
- Consult Factory for Switches that can be Turned when Solenoid is De-energized

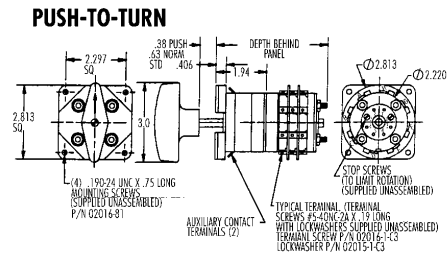


ORDERING INFORMATION -

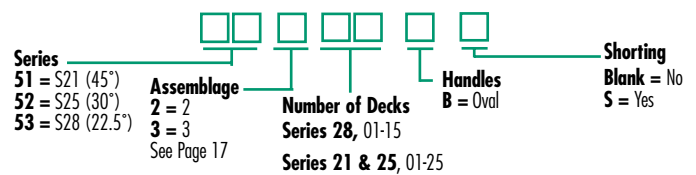


Push-to-Turn Switches

- Must Push approx. .25" (15 lb.) to Turn
- Push opens a NC Contact Allowing Switching at no Load or between Positions Without Activating Intermediate Positions

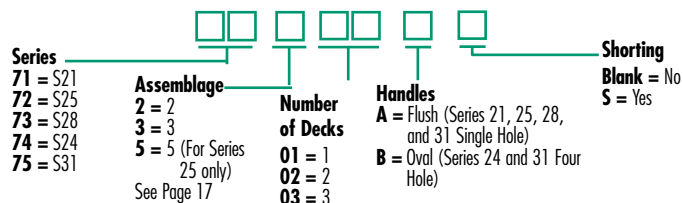


ORDERING INFORMATION -



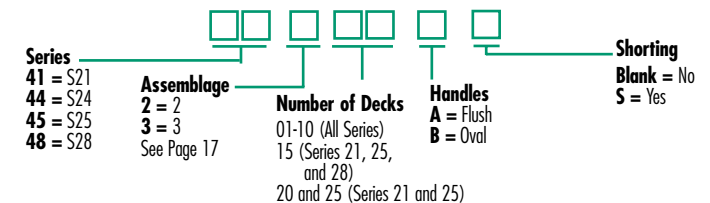
Spring Return Switches (Momentary Action)

ORDERING INFORMATION -



Waterproof Mount Switches

ORDERING INFORMATION -



Note: For Series 31, use standard Tap and Selector Switches, plus seal-nut #02017-8



DETENT-ACTION SWITCHES

ELECTROSWITCH	DETENT SWITCH WORKSHEET	
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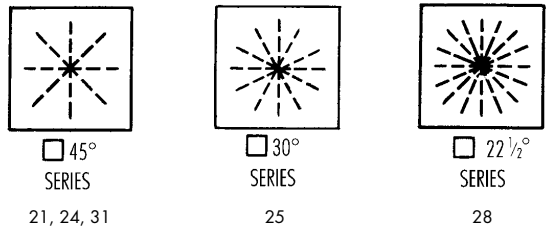
FEATURES:	ROTARY ACTION:	SPECIAL FEATURES														
<table style="width:100%;"> <tr> <td style="width:50%;">SERIES</td> <td style="width:50%;">HANDLES</td> </tr> <tr> <td><input type="checkbox"/> 21</td> <td><input type="checkbox"/> Oval Flush</td> </tr> <tr> <td><input type="checkbox"/> 24</td> <td><input type="checkbox"/> Oval Shank</td> </tr> <tr> <td><input type="checkbox"/> 25</td> <td><input type="checkbox"/> Pistol-Grip</td> </tr> <tr> <td><input type="checkbox"/> 28</td> <td><input type="checkbox"/> Knurled</td> </tr> <tr> <td><input type="checkbox"/> 31A</td> <td><input type="checkbox"/> Other</td> </tr> <tr> <td><input type="checkbox"/> 31B</td> <td></td> </tr> </table>	SERIES	HANDLES	<input type="checkbox"/> 21	<input type="checkbox"/> Oval Flush	<input type="checkbox"/> 24	<input type="checkbox"/> Oval Shank	<input type="checkbox"/> 25	<input type="checkbox"/> Pistol-Grip	<input type="checkbox"/> 28	<input type="checkbox"/> Knurled	<input type="checkbox"/> 31A	<input type="checkbox"/> Other	<input type="checkbox"/> 31B		<input type="checkbox"/> Maintained <input type="checkbox"/> Spring-return CONTACTS: <input type="checkbox"/> Nonshorting Contacts break-before-make <input type="checkbox"/> Shorting Contacts make-before-break	Panel Thickness _____ Maximum Depth Behind Panel Allowable _____ <input type="checkbox"/> Key Lockable Handle Key Removable in _____ Position (s) <input type="checkbox"/> Key Operated (Series 31) Key Removable in _____ Position (s) <input type="checkbox"/> Solenoid Lock <input type="checkbox"/> Push-to-Turn <input type="checkbox"/> Waterproof Mount <input type="checkbox"/> Nameplate # _____
SERIES	HANDLES															
<input type="checkbox"/> 21	<input type="checkbox"/> Oval Flush															
<input type="checkbox"/> 24	<input type="checkbox"/> Oval Shank															
<input type="checkbox"/> 25	<input type="checkbox"/> Pistol-Grip															
<input type="checkbox"/> 28	<input type="checkbox"/> Knurled															
<input type="checkbox"/> 31A	<input type="checkbox"/> Other															
<input type="checkbox"/> 31B																

SWITCH POSITION TABULATION (FRONT VIEW)

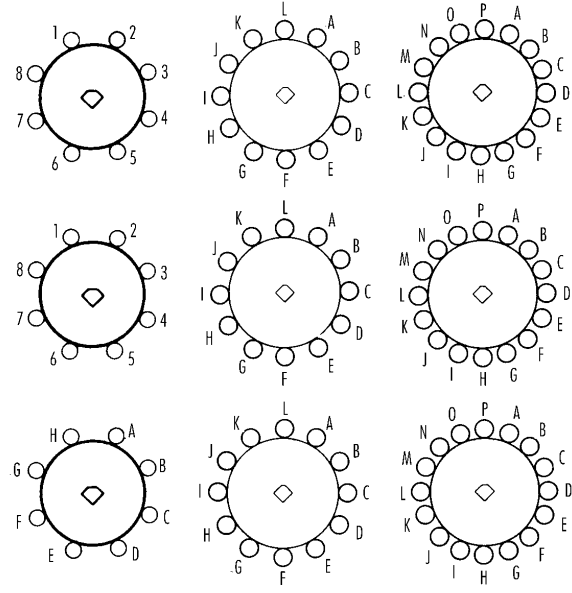
TITLE ENGRAVING:		POSITION ENGRAVING															
DECK	CONTACTS / HANDLE END	POSITIONS															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16



HANDLE POSITIONS



DECK LAYOUTS



Series 24 & 31 use numerical terminal markings
 Series 21, 25 & 28 use alphabetical terminal markings
 Indicate external terminal connectors required
 Switch is viewed from handle end

* Terminal numbers are preliminary pending factory review and approval.

MADE BY:	DATE:	COMPANY	DWG NO.	
APPR BY:	DATE:		SHEET	OF



SNAP-ACTION ROTARY SWITCHES

OVERVIEW

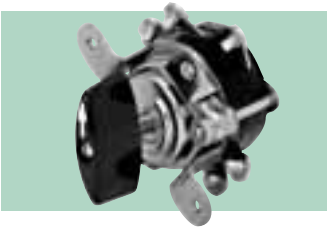
Features

- Two to Four Positions and Up to 12 Poles
- Time Proven Double-Wiping Contacts for Low Contact Resistance Even Under Extreme Shock and Vibration Conditions
- Current Ratings up to 200 Amperes at 600VAC
- Switching Speed not Dependent on Operator Action
- Quick Make and Break Action. Approximately Ten Millisecond Contact Transfer Time
- Excellent for DC as well as AC Switching
- All Making and Breaking of Contacts Takes Place in the Fully Enclosed Decks
- Versatile - Many Special Designs are Available to Fit Every Application
- Available in MIL SPEC Versions. Contact Factory or Your Local Representative
- Insulating Materials - NEMA Class A (105°C)

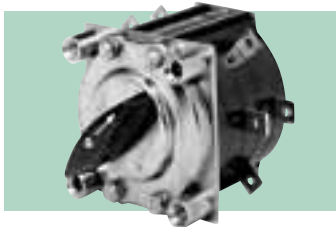
Choose the switch that best suits your application

Electroswitch offers a wide variety of Snap-Action Rotary Switches designed specifically to satisfy the most stringent requirements in Industrial applications. In fact, we offer the world's most complete, tested, and proven line of Snap-Action Rotary Switches.

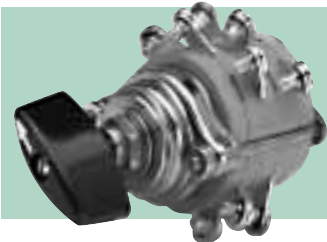
The following is a quick description of each series. It is designed to help you select the one that is right for your application.



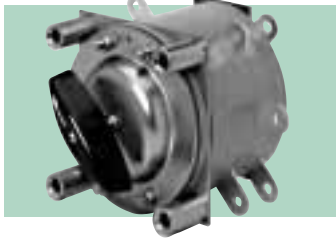
Series 101 Four Hole Mount



Series 105



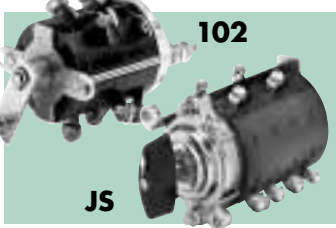
Series 101 Single Hole Mount



Series 107



Series 103



Series 102 and JS
Modified Snap Switches

Snap-Action Switches - Selector Guide

CHARACTERISTICS	Series 101	Series 103	Series 105	Series 107	Series JS
SECTIONS	1-12	1-12	1-8	1-8	1-5
POLES	1-12	1-12	1-8	1-8	1-5
POSITIONS	2-4	2-4	2-4	2-4	2-5 & 8
INDEXING	90°	90°	90°	90°	45°
ELECTRICAL RATINGS					
Continuous Rating	20A-600V	45A-600V	75A-600V	200A-600V	30A
Interrupting Current					
120VAC	15A	40A	60A	200A	30A
240VAC	10A	40A	60A	200A	30A
600VAC	5A	30A	60A	200A	15A
24VDC	15A	30A	60A	200A	30A
125VDC	10A	30A	60A	on request	5A
250VDC	5A	30A	60A	on request	3A
Max. Breaking Ability	90A	180A	360A	600A	180A
Max. Making Ability	90A	180A	360A	600A	180A
Momentary Current					
3 seconds	140A	300A	300A		
30 seconds	45A	125A	250A		
60 seconds	35A	100A	175A		
Overload Current (50 operations)					
120VAC	90A	180A	360A	600A	
Dielectric Strength	2200V rms	2200V rms	2200V rms	2200V rms	2200V rms
Insulation Resistance	100 megohms	100 megohms	100 megohms	100 megohms	100 megohms
Contact Resistance	30 milliohms	10 milliohms	6 milliohms	1.5 milliohms	10 milliohms
HORSEPOWER RATINGS					
3-phase ratings - reduce by half for 1-phase					
110/120VAC	1/2 hp				
220/240VAC	1/2 hp	2 hp			
440/480VAC		2 hp			
MOUNTINGS					
Single Hole	Yes				
4-Hole	Yes	Yes	Yes	Yes	Yes
Base-mount	Yes	Yes	Yes	Yes	Yes
Waterproof mount	Yes	Yes	Yes	Yes	Yes
SPECIAL DRIVES					
Spring return	Yes	Yes	Yes		
APPROVALS					
UL Recognized	Yes	Yes	Yes*	Yes*	
CSA Certified	Yes	Yes			

* Circuit 6 Only



SERIES 101 FOUR HOLE MOUNT SNAP-ACTION SWITCHES

Features

- Double-Wiping Contacts for Low Resistance Even Under Extreme Shock and Vibration
- Fast Switching Speed Independent of Operator Action - Approximately 10 Milliseconds
- Four Hole Mount
- NEMA Class A (105°C) Insulating Materials
- Excellent for DC as well as AC Switching
- Making and Breaking of Contacts Performed Inside Enclosed Decks

Electrical Specifications

Continuous Ratings

- 20A/600VAC

Interrupt Ratings

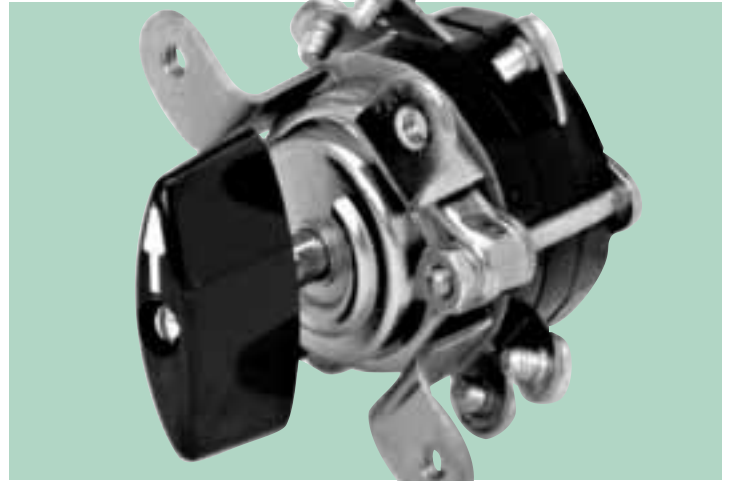
- 15A/120VAC
- 10A/240VAC
- 7.5A/600VAC, (Circuit 1,2,3,4)
- 10A/125VDC
- 5A/250VDC
- 1A/600 VAC, (Circuit 6, 7)
- Overload Current (50 operations): 90A/600VAC Resistive
- Dielectric Breakdown: 2200V rms minimum
- Insulation Resistance: 100 Megohms minimum
- Contacts Resistance: 30 Milliohms max. (10 Milliohms Average Before Life)

Mechanical Specifications

Poles	Circuit 1 = 12 MAX; Circuit 2, 3 & 4 = 8 MAX; Circuit 6 & 7=11 MAX
Positions	2, 3, or 4
Contacts	Break-Before-Make (Non-Shorting); Make-Before-Break (Shorting)
Action	Positive Snap Action - 90° Indexing
Movement	Unlimited Continuous Rotation in Both Directions or Factory Limited to 2 or 3 Positions
Mounting	Panel Mount, 4 Tapped Mounting Holes
Panel Thickness	3/16" Standard
Rotor Contacts	Phosphor-bronze, Double Grip
Stationary Contacts	Copper, Integral with Screw Type Terminals
Construction	Contacts Enclosed in Molded-phenolic Disks

Approvals

- UL: File No. E18174
- CSA: File No. LR20743



ORDERING INFORMATION - Standard

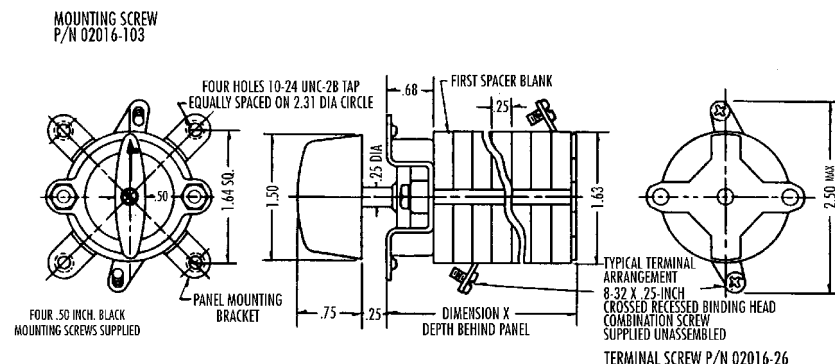
Model No. 101 □ □ □ - □			
Series			
Circuit			
1 = Circuit 1	Number of Poles*		Handle
2 = Circuit 2	01 = 1	05 = 5	09 = 9
3 = Circuit 3	02 = 2	06 = 6	10 = 10
4 = Circuit 4	03 = 3	07 = 7	11 = 11
6 = Circuit 6	04 = 4	08 = 8	12 = 12
7 = Circuit 7			
			No. of Positions
			Blank = Unlimited
			2 = 2
			3 = 3

ORDERING INFORMATION - Specials

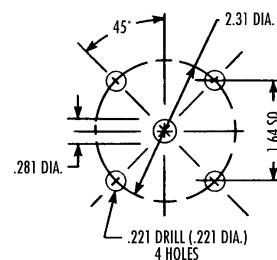
Model No. 101 □ □ □ □			
Series			
Circuit			
1 = Circuit 1	Number of Poles*		To be assigned
2 = Circuit 2	01 = 1	05 = 5	at factory
3 = Circuit 3	02 = 2	06 = 6	
4 = Circuit 4	03 = 3	07 = 7	
6 = Circuit 6	04 = 4	08 = 8	
7 = Circuit 7			
9 = Special			

Note: Worksheet on page 29 needs to be filled out by customer.

* Circuit 1: 12 Poles Max., Circuits 2, 3, & 4: 8 Poles Max., Circuits 6 & 7: 11 Poles Max.
Note 1: For limits on the # of poles available in each circuit, see depth behind panel chart.



PANEL DRILLING DIMENSIONS



NOTE: FOR WATERPROOF MOUNTINGS: THE (4) MOUNTING HOLES S/B .201 DIA. THE CENTER HOLE S/B .5" DIA. DO NOT CHAMFER MOUNTING HOLES 1/64 MAX. BREAK PERMISSIBLE

No. of Poles	Depth Behind Panels (in.)		
	Circuit 1	Circuit 6 & 7	Circuit 2,3,4
1	1.28	1.28	1.53
2	1.53	1.53	2.03
3	1.78	1.78	2.53
4	2.03	2.03	3.03
5	2.28	2.28	3.53
6	2.53	2.53	4.03
7	2.78	3.00	4.65
8	3.03	3.16	5.16
9	3.41	3.41	-
10	3.66	3.66	-
11	3.91	3.91	-
12	4.16	-	-



SERIES 101 SINGLE HOLE MOUNT SNAP-ACTION SWITCHES

Features

- Double-Wiping Contacts for Low Resistance Even Under Extreme Shock and Vibration
- Fast Switching Speed Independent of Operator Action - Approximately 10 Milliseconds
- Single Hole Mount
- NEMA Class A (105°C) Insulating Materials
- Excellent for DC as well as AC Switching
- Making and Breaking of Contacts Performed Inside Enclosed Decks

Electrical Specifications

Continuous Ratings

- 20A/600VAC

Interrupt Ratings

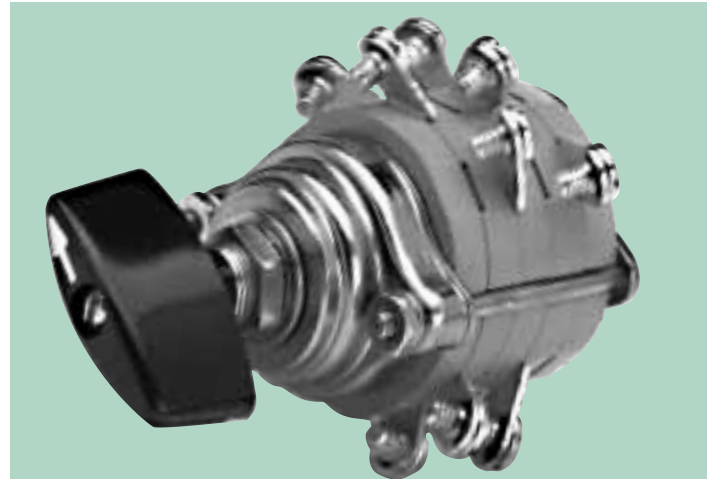
- 15A/120VAC
- 10A/240VAC
- 7.5A/600VAC, (Circuit 1,2,3,4)
- 10A/125VDC
- 5A/250VDC
- 1A/600 VAC, (Circuit 6, 7)
- Overload Current (50 operations): 90A/600VAC Resistive
- Dielectric Breakdown: 2200V rms minimum
- Insulation Resistance: 100 Megohms minimum
- Contacts Resistance: 30 Milliohms max. (10 Milliohms Average Before Life)

Mechanical Specifications

Poles	Circuit 1 = 6 MAX; Circuit 2, 3 & 4 = 3 MAX; Circuit 6 & 7=6 MAX
Positions	2, 3, or 4
Contacts	Break-Before-Make (Non-Shorting); Make-Before-Break (Shorting)
Action Movement	Positive Snap Action - 90° Indexing Unlimited Continuous Rotation in Both Directions or Factory Limited to 2 or 3 Positions
Mounting	Panel Mount, 4 Tapped Mounting Holes
Panel Thickness	3/16" Standard
Rotor Contacts	Phosphor-bronze, Double Grip
Stationary Contacts	Copper, Integral with Screw Type Terminals
Construction	Contacts Enclosed in Molded-phenolic Disks

Approvals

- UL: File No. E18174
- CSA: File No. LR20743

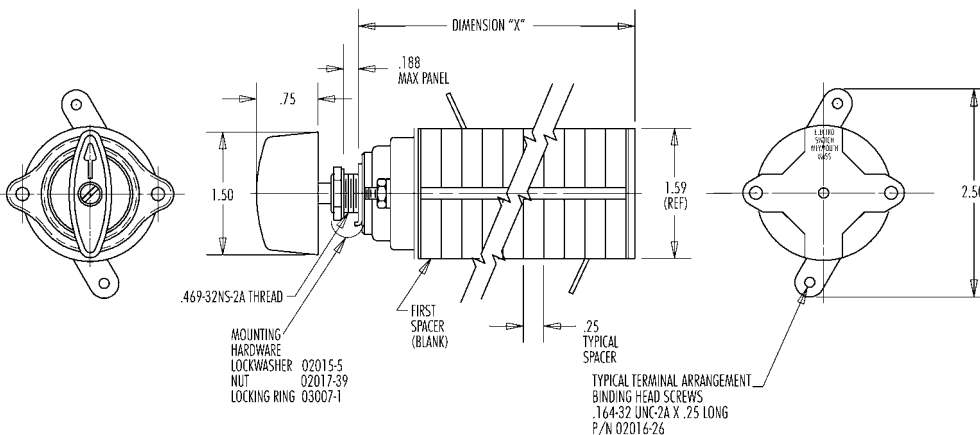


ORDERING INFORMATION - Specials

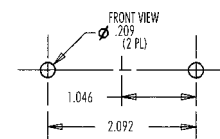
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Series	_____				
Circuit	1 = Circuit 1	2 = Circuit 2	3 = Circuit 3	4 = Circuit 4	6 = Circuit 6
	7 = Circuit 7				
		Number of Poles*			To be assigned at factory
		01 = 1			
		02 = 2			
		03 = 3			
		04 = 4			
		05 = 5			
		06 = 6			

* Circuit 1: 6 Poles Max., Circuits 2, 3, & 4: 3 Poles Max., Circuits 6 & 7: 6 Poles Max. Beyond 6 poles consult factory.

Note 1: For limits on the # of poles available in each circuit, see depth behind panel chart.



PANEL DRILLING DIMENSIONS



No. of Poles	Depth Behind Panels (in.)		
	Circuit 1	Circuit 6 & 7	Circuit 2,3,4
1	1.34	1.34	1.59
2	1.59	1.59	2.09
3	1.84	1.84	2.59
4	2.09	2.09	—
5	2.34	2.34	—
6	2.59	2.59	—



SERIES 103 MOUNT SNAP-ACTION SWITCHES

Features

- Double-Wiping Contacts for Low Resistance Even Under Extreme Shock and Vibration
- Fast Switching Speed Independent of Operator Action - Approximately 10 Milliseconds
- Four Hole Mount
- NEMA Class A (105°C) Insulating Materials
- Excellent for DC as well as AC Switching
- Making and Breaking of Contacts Performed Inside Enclosed Decks

Electrical Specifications

Continuous Ratings

- 45A/600VAC

Interrupt Ratings

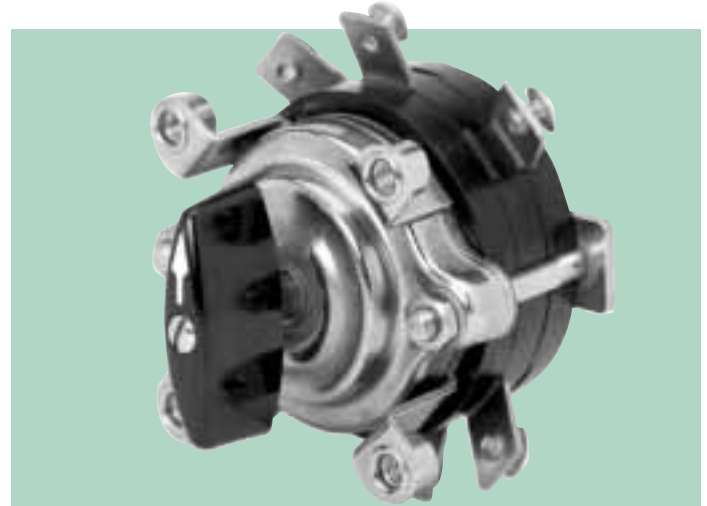
- 30A/480VAC
- 15A/600VAC
- 30A/250VDC
- Overload Current (50 operations): 180A/600VAC Resistive
- Dielectric Breakdown: 2200V rms minimum
- Insulation Resistance: 100 Megohms minimum
- Contacts Resistance: 10 Milliohms max. (4 Milliohms Average Before Life)

Mechanical Specifications

Poles	Circuit 1 = 12 MAX; Circuit 2, 3 & 4 = 8 MAX; Circuit 6 & 7=11 MAX
Positions	2, 3, or 4
Contacts	Break-Before-Make (Non-Shorting); Make-Before-Break (Shorting)
Action	Positive Snap Action - 90° Indexing
Movement	Unlimited Continuous Rotation in Both Directions or Factory Limited to 2 or 3 Positions
Mounting	Panel Mount, 4 Tapped Mounting Holes
Panel Thickness	3/16" Standard
Rotor Contacts	Phosphor-bronze, Double Grip
Stationary Contacts	Copper, Integral with Screw Type Terminals
Construction	Contacts Enclosed in Molded-phenolic Disks

Approvals

- UL: File No. E18174
- CSA: File No. LR20743



ORDERING INFORMATION - Standard

Model No. **103** -

Circuit	Number of Poles*	Handle	No. of Positions
1 = Circuit 1	01 = 1 05 = 5 09 = 9	A = Oval Flush	Blank = Unlimited
2 = Circuit 2	02 = 2 06 = 6 10 = 10	B = Oval	2 = 2
3 = Circuit 3	03 = 3 07 = 7 11 = 11	C = Round Knurled	3 = 3
4 = Circuit 4	04 = 4 08 = 8 12 = 12	D = Pistol Grip	
6 = Circuit 6			
7 = Circuit 7			

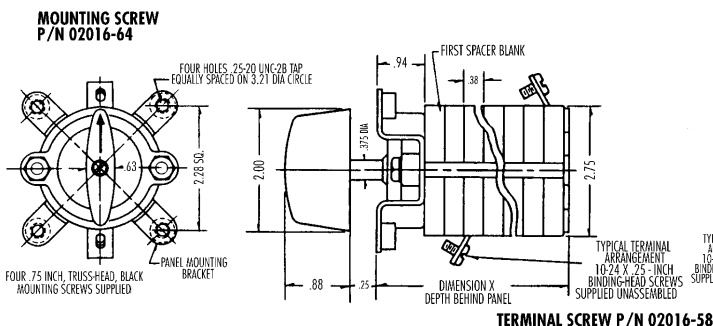
ORDERING INFORMATION - Specials

Model No. **103**

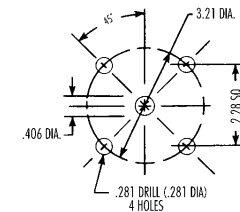
Circuit	Number of Poles*	To be assigned at factory
1 = Circuit 1	01 = 1 05 = 5 09 = 9	
2 = Circuit 2	02 = 2 06 = 6 10 = 10	
3 = Circuit 3	03 = 3 07 = 7 11 = 11	
4 = Circuit 4	04 = 4 08 = 8 12 = 12	
6 = Circuit 6		
7 = Circuit 7		
9 = Special		

Note: Worksheet on page 29 needs to be filled out by customer.

* Circuit 1: 12 Poles Max., Circuits 2, 3, & 4: 8 Poles Max., Circuits 6 & 7: 11 Poles Max.
Note 1: For limits on the # of poles available in each circuit, see depth behind panel chart.



PANEL DRILLING DIMENSIONS



No. of Poles	Depth Behind Panels (in.)		
	Circuit 1	Circuit 6 & 7	Circuit 2,3,4
1	1.84	1.84	2.22
2	2.22	2.22	2.97
3	2.59	2.59	3.72
4	2.97	2.97	4.47
5	3.34	3.34	5.22
6	3.72	3.72	5.97
7	4.09	4.31	6.94
8	4.47	4.69	7.69
9	5.06	5.06	-
10	5.44	5.44	-
11	5.81	5.81	-
12	6.19	-	-



SERIES 105 MOUNT SNAP-ACTION SWITCHES

Features

- Double-Wiping Contacts for Low Resistance Even Under Extreme Shock and Vibration
- Fast Switching Speed Independent of Operator Action - Approximately 10 Milliseconds
- Four Hole Mount
- NEMA Class A (105°C) Insulating Materials
- Excellent for DC as well as AC Switching
- Making and Breaking of Contacts Performed Inside Enclosed Decks

Electrical Specifications

Continuous Ratings

- 75A/600VAC

Interrupt Ratings

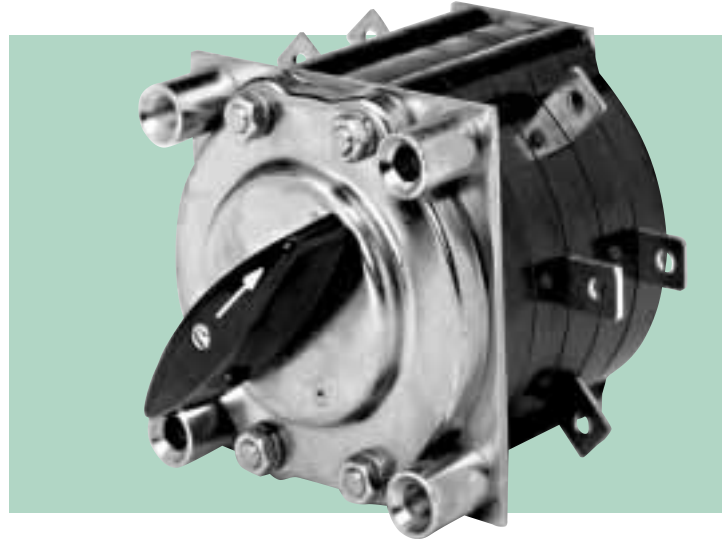
- 60A/600VAC • 60A/250VDC
- Overload Current (50 operations): 360A/600VAC Resistive
- Dielectric Breakdown: 2200V rms minimum
- Insulation Resistance: 100 Megohms minimum
- Contacts Resistance: 6 Milliohms max. (1.5 Milliohms Average Before Life)

Mechanical Specifications

Poles	Circuit 1, 6 & 7 = 8 MAX; Circuit 2, 3 & 4 = 6 MAX
Positions	2, 3, or 4
Contacts	Break-Before-Make (Non-Shorting); Make-Before-Break (Shorting)
Action Movement	Positive Snap Action - 90° Indexing Unlimited Continuous Rotation in Both Directions or Factory Limited to 2 or 3 Positions
Mounting	Panel Mount, 4 Tapped Mounting Holes
Panel Thickness	3/16" Standard
Rotor Contacts	Phosphor-bronze, Double Grip
Stationary Contacts	Copper, Integral with Screw Type Terminals
Construction	Contacts Enclosed in Molded-phenolic Disks

Approvals

- UL and ULc: File No. E80080 (Circuit 6 Only)



ORDERING INFORMATION - Standard

Model No. **105** □ □ □ - □

Circuit	Number of Poles*	Handle	No. of Positions
1 = Circuit 1	01 = 1 05 = 5	A = Oval Flush	Blank = Unlimited
2 = Circuit 2	02 = 2 06 = 6	B = Oval	2 = 2
3 = Circuit 3	03 = 3 07 = 7	C = Round Knurled	3 = 3
4 = Circuit 4	04 = 4 08 = 8	D = Pistol Grip	
6 = Circuit 6			
7 = Circuit 7			

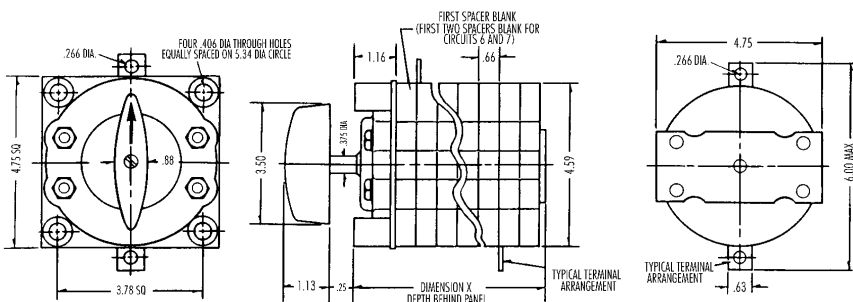
ORDERING INFORMATION - Specials

Model No. **105** □ □ □ □

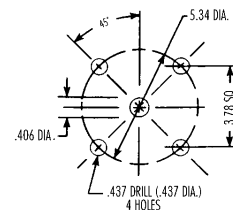
Circuit	Number of Poles*	To be assigned at factory
1 = Circuit 1	01 = 1 05 = 5	
2 = Circuit 2	02 = 2 06 = 6	
3 = Circuit 3	03 = 3 07 = 7	
4 = Circuit 4	04 = 4 08 = 8	
6 = Circuit 6		
7 = Circuit 7		
9 = Special		

Note: Worksheet on page 29 needs to be filled out by customer.

* Circuit 1: 12 Poles Max., Circuits 2, 3, & 4: 8 Poles Max., Circuits 6 & 7: 11 Poles Max.
Note 1: For limits on the # of poles available in each circuit, see depth behind panel chart.



PANEL DRILLING DIMENSIONS



NOTE: FOR WATERPROOF MOUNTINGS:
THE 14) MOUNTING HOLES S/B .397 DIA. I
THE CENTER HOLE S/B .640 DIA.
1/64 MAX. BREAK PERMISSIBLE

No. of Poles	Depth Behind Panels (in.)		
	Circuit 1	Circuit 6 & 7	Circuit 2,3,4
1	2.62	3.28	3.28
2	3.28	3.94	4.59
3	3.94	4.59	5.91
4	4.59	5.25	7.22
5	5.25	5.91	8.53
6	5.91	6.56	9.84
7	6.56	7.22	-
8	7.22	7.87	-



SERIES 107 MOUNT SNAP-ACTION SWITCHES

Features

- Double-Wiping Contacts for Low Resistance Even Under Extreme Shock and Vibration
- Fast Switching Speed Independent of Operator Action - Approximately 10 Milliseconds
- Four Hole Mount
- NEMA Class A (105°C) Insulating Materials
- Excellent for DC as well as AC Switching
- Making and Breaking of Contacts Performed Inside Enclosed Decks

Electrical Specifications

Continuous Ratings

- 200A/600VAC

Interrupt Ratings

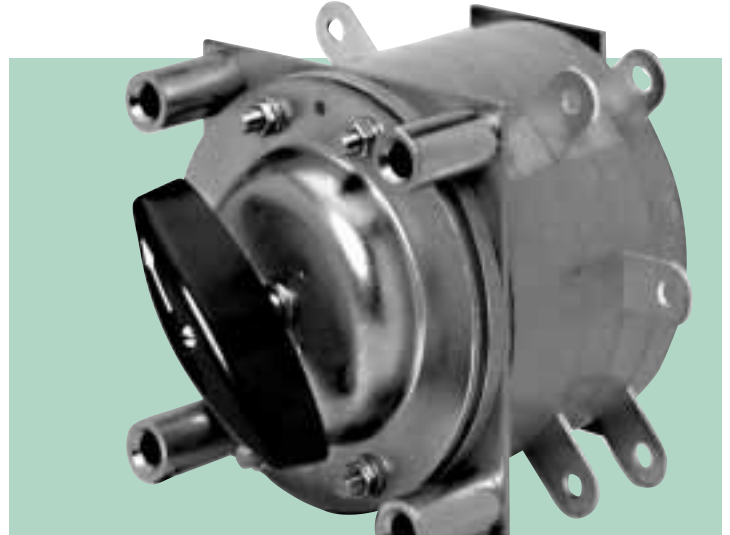
- 200A/600VAC
- 200A/24VDC
- Overload Current (50 operations): 600A/600VAC Resistive
- Dielectric Breakdown: 2500V rms minimum
- Insulation Resistance: 100 Megohms minimum
- Contacts Resistance: 1.5 Milliohms max. (.5 Milliohms Average Before Life)

Mechanical Specifications

Poles	Circuit 1 = 8 MAX; Circuit 2, 3, 4, 6 & 7 = 6 MAX
Positions	2, 3, or 4
Contacts	Break-Before-Make (Non-Shorting); Make-Before-Break (Shorting)
Action Movement	Positive Snap Action - 90° Indexing Unlimited Continuous Rotation in Both Directions or Factory Limited to 2 or 3 Positions
Mounting	Panel Mount, 4 Tapped Mounting Holes
Panel Thickness	3/16" Standard
Rotor Contacts	Phosphor-bronze, Double Grip
Stationary Contacts	Copper, Integral with Screw Type Terminals
Construction	Contacts Enclosed in Molded-phenolic Disks

Approvals

- UL and ULc: File No. 80080 (Circuit 6 Only)



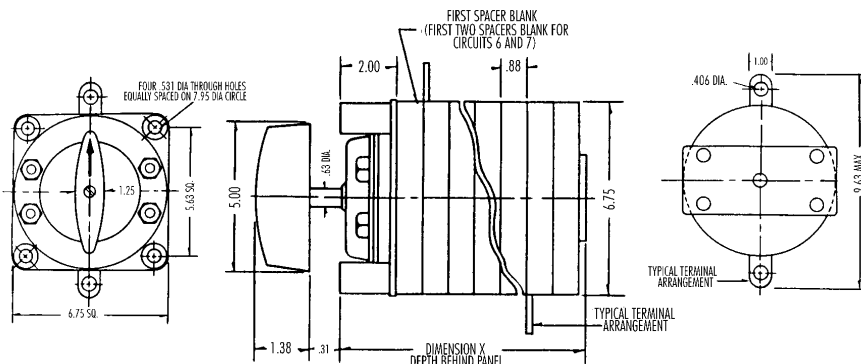
ORDERING INFORMATION - Standard

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Circuit	Number of Poles*	Handle	No. of Positions
1 = Circuit 1	01 = 1 05 = 5	A = Oval Flush	Blank = Unlimited
2 = Circuit 2	02 = 2 06 = 6	B = Oval	2 = 2
3 = Circuit 3	03 = 3 07 = 7	C = Round Knurled	3 = 3
4 = Circuit 4	04 = 4 08 = 8	D = Pistol Grip	
6 = Circuit 6			
7 = Circuit 7			

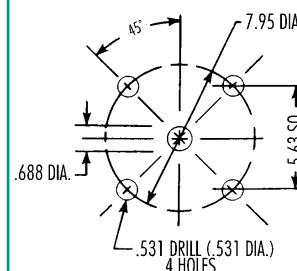
ORDERING INFORMATION - Specials

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Circuit	Number of Poles*	To be assigned at factory	
1 = Circuit 1	01 = 1 05 = 5		
2 = Circuit 2	02 = 2 06 = 6		
3 = Circuit 3	03 = 3 07 = 7		
4 = Circuit 4	04 = 4 08 = 8		
6 = Circuit 6			
7 = Circuit 7			
9 = Special		Note: Worksheet on page 29 needs to be filled out by customer.	

* Circuit 1: 12 Poles Max., Circuits 2, 3, & 4: 8 Poles Max., Circuits 6 & 7: 11 Poles Max.
Note 1: For limits on the # of poles available in each circuit, see depth behind panel chart.



PANEL DRILLING DIMENSIONS



NOTE: FOR WATERPROOF MOUNTINGS THE (4) MOUNTING HOLES S/B .515" DIA. THE CENTER HOLE S/B .765" DIA. DO NOT CHAMFER MOUNTING HOLES 1/64 MAX. BREAK PERMISSIBLE

No. of Poles	Depth Behind Panels (in.)		
	Circuit 1	Circuit 6 & 7	Circuit 2,3,4
1	3.94	4.81	4.81
2	4.81	5.69	6.56
3	5.69	6.56	8.31
4	6.56	7.44	10.06
5	7.44	8.31	11.81
6	8.31	9.19	13.56
7	9.19	-	-
8	10.06	-	-



SERIES 102 AUXILIARY MODIFIED SNAP-ACTION SWITCHES

Features

- Double-Wiping Contacts for Low Resistance Even Under Extreme Shock and Vibration
- Two Hole Mount
- NEMA Class A (105°C) Insulating Materials
- Excellent for DC as well as AC Switching
- Making and Breaking of Contacts Performed Inside Enclosed Decks

Electrical Specifications

Continuous Ratings

- 20A/600VAC

Interrupt Ratings

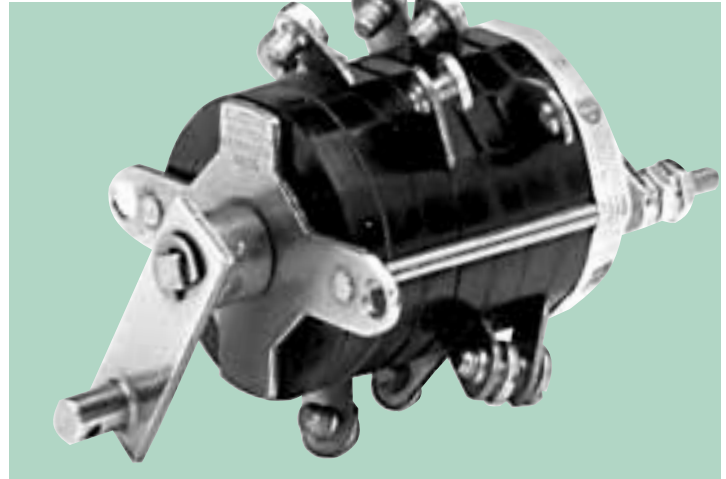
- 15A/120VAC
- 10A/240VAC
- 7.5A/600VAC, (Circuit 1,2,3,4)
- 10A/125VDC
- 5A/250VDC
- 1A/600 VAC, (Circuit 6, 7)
- Overload Current (50 operations): 90A/600VAC Resistive
- Dielectric Breakdown: 2200V rms minimum
- Insulation Resistance: 100 Megohms minimum
- Contacts Resistance: 30 Milliohms max. (10 Milliohms Average Before Life)

Mechanical Specifications

Poles	Circuit 1 = 24 MAX
Contacts	Break-Before-Make (Non-Shorting); Make-Before-Break (Shorting)
Action	90° Indexing
Movement	Unlimited Continuous Rotation in Both Directions
Mounting	Panel Mount, 2 Holes
Rotor Contacts	Phosphor-bronze, Double Grip
Stationary Contacts	Copper, Integral with Screw Type Terminals
Construction	Contacts Enclosed in Molded-phenolic Disks

Approvals

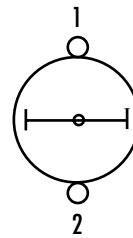
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- CSA: File No. LR20743



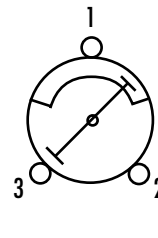
ORDERING INFORMATION

Consult Factory for Complete Details and Ordering Information

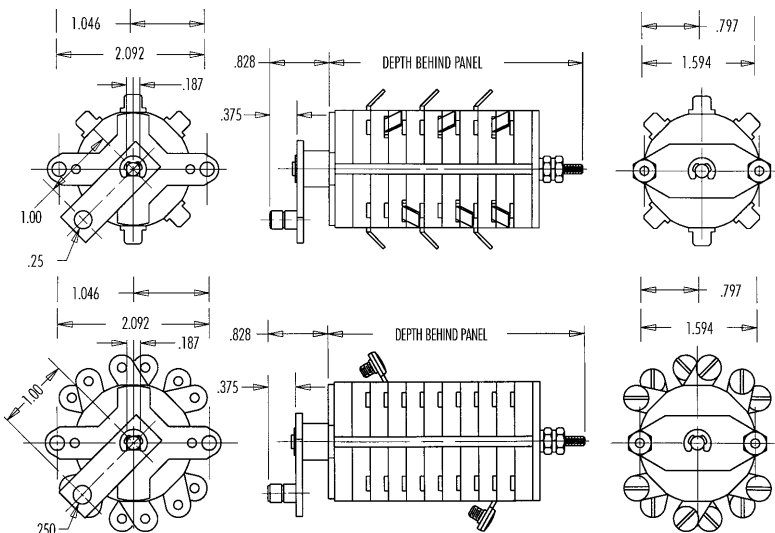
TYPICAL CIRCUITS



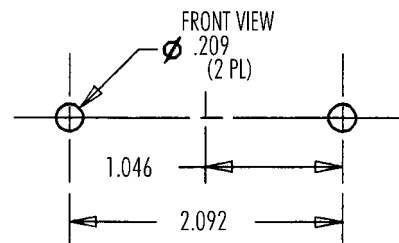
Circuit 1



Circuit 6



PANEL DRILLING DIMENSIONS





SERIES JS MODIFIED SNAP-ACTION SWITCHES

Features

- Double-Wiping Contacts for Low Resistance Even Under Extreme Shock and Vibration
- Fast Switching Speed Independent of Operator Action - Approximately 10 Milliseconds
- Four Hole Mount
- NEMA Class A (105°C) Insulating Materials
- Excellent for DC as well as AC Switching
- Making and Breaking of Contacts Performed Inside Enclosed Decks

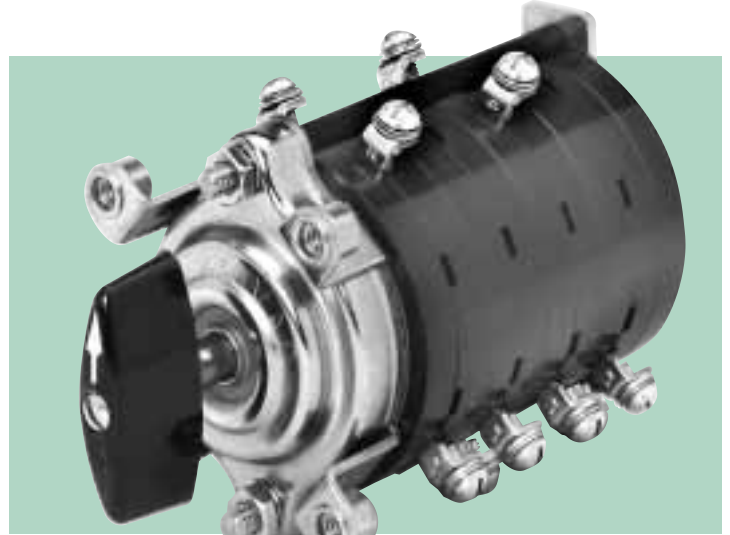
Electrical Specifications

Interrupt Ratings

- 30A/120VAC
- 15A/600VAC
- 30A/240VAC
- 5A/125VDC
- 3A/250VDC
- 30A/24VDC
- Dielectric Breakdown: 2200V rms minimum
- Insulation Resistance: 100 Megohms minimum
- Contacts Resistance: 10 Milliohms max. (4 Milliohms Average Before Life)

Mechanical Specifications

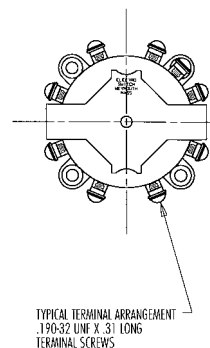
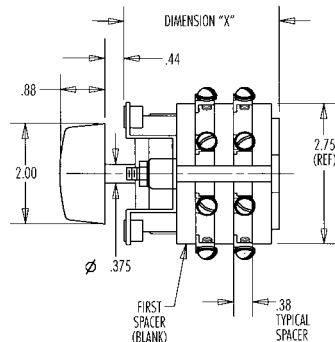
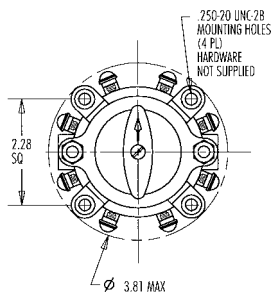
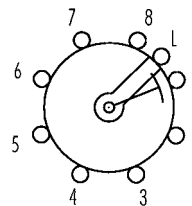
Sections	1 to 5
Poles	1 to 5
Positions	Unlimited Rotation for 8 Positions or Limited from 2 to 5 Positions
Contacts	Break-Before-Make (Non-Shorting); Make-Before-Break (Shorting) Available up to 3 Sections
Action	Positive Snap Action - 45° Indexing
Mounting	Panel or Base
Panel Thickness	3/16" Max. Standard
Rotor Contacts	Silver Plated Phosphor-bronze, Double Grip
Stationary Contacts	Silver Plated Copper, w/Integral Screw Type Terminals
Construction	Contacts Enclosed in Molded-phenolic Disks



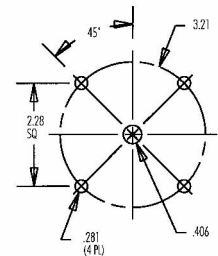
ORDERING INFORMATION

Series	Sections	Positions	Torque Approx.	Weight Approx.	Dimension "x"
JS 2100	1	8-No OFF	9 lb.-inches	21 oz.	2 1/4"
JS 2200	2	8-No OFF	9 lb.-inches	26 oz.	3"
JS 2300	3	8-No OFF	9 lb.-inches	31 oz.	3 3/4"
JS 2400	4	8-No OFF	9 lb.-inches	36 oz.	4 1/2"
JS 2500	5	8-No OFF	9 lb.-inches	41 oz.	5 1/4"

DECK LAYOUT



PANEL DRILLING DIMENSIONS



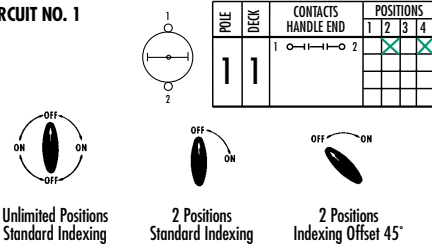


SNAP-ACTION SWITCHES

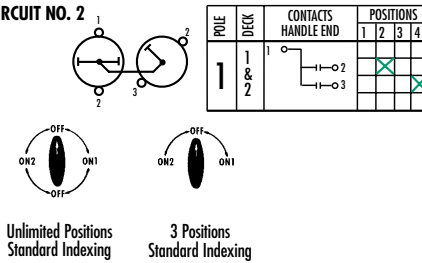
CONTACT DIAGRAMS AND APPLICATION SPECIFIC SWITCHES

CONTACT DIAGRAMS

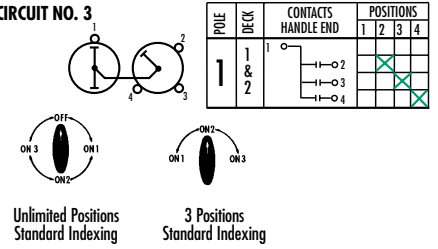
CIRCUIT NO. 1



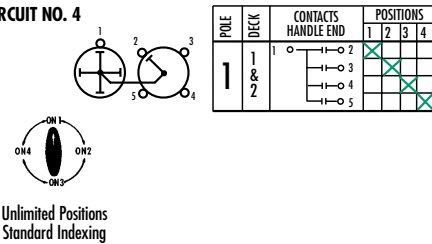
CIRCUIT NO. 2



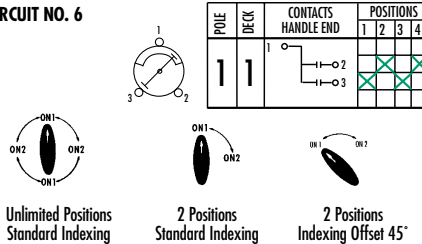
CIRCUIT NO. 3



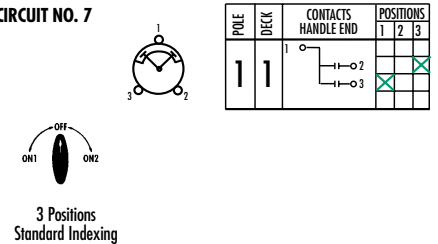
CIRCUIT NO. 4



CIRCUIT NO. 6



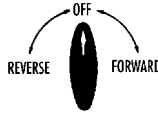
CIRCUIT NO. 7



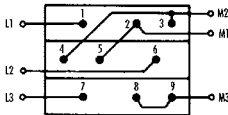
APPLICATION SPECIFIC SWITCHES

REVERSING SWITCH Three Phase

Order #101703A-3
Handle: Oval
Jumpers not supplied
Break-before-make contacts



DECKS	CONTACTS	POS.		
		REV	OFF	FORW
1	1-1-1-2 1-1-1-3	X		X
2	6-1-1-4 6-1-1-5	X		X
3	7-1-1-8 7-1-1-9	X		X

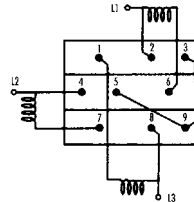


WYE DELTA Changeover Switch

Order #101603A-2
For motor speed control
Handle: Oval
Jumpers not supplied
Break-before-make contacts



DECKS	CONTACTS	POS.	
		Y	Δ
1	1-1-1-2 1-1-1-3	X	X
2	6-1-1-4 6-1-1-5	X	X
3	7-1-1-8 7-1-1-9	X	X

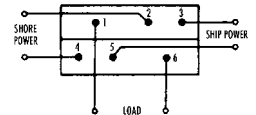


SHIP-TO-SHORE Changeover Switch

Order #101602A-2A
Handle: Oval
Jumpers not supplied
Break-before-make contacts

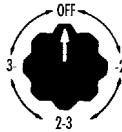


DECKS	CONTACTS	POS.	
		SHIP	SHORE
1	1-1-1-2 1-1-1-3	X	X
2	6-1-1-4 6-1-1-5	X	X

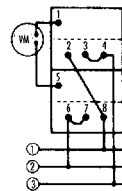


VOLTMETER Transfer Switch

Order #10104C
3-phase, phase-to-phase
Handle: Round, Knurled
Nameplates and jumpers are supplied
Break-before-make contacts



DECKS	CONTACTS	POS.			
		OFF	1-2	2-3	3-1
1	1-1-1-2 1-1-1-3		X	X	X
2	4-1-1-4 4-1-1-5		X	X	X
3	5-1-1-6 5-1-1-7		X	X	X
4	8-1-1-8 8-1-1-9		X	X	X



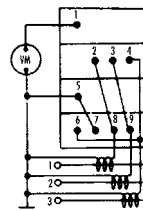
AMMETER Transfer Switch

Order #10110C
3-phase, 3 current transformers
Handle: Round, Knurled
Nameplates and jumpers are supplied
Make-before-break contacts



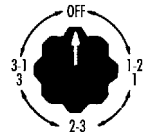
DECKS	CONTACTS	POS.			
		OFF	* 1	* 2	* 3
1	1-1-1-2 1-1-1-3		X	X	X
2	4-1-1-4 4-1-1-5		X	X	X
3	5-1-1-6 5-1-1-7		X	X	X
4	8-1-1-8 8-1-1-9		X	X	X

*Denotes make-before-break

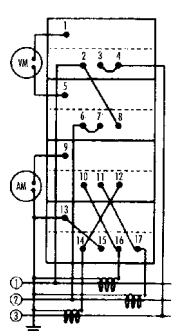


AMMETER-VOLTMETER Transfer Switch

Order #10115C
3-phase, phase-to-phase
3 current transformers
Handle: Round, Knurled
Nameplates and jumpers are supplied
Make-before-break (shorting) contacts



DECKS	CONTACTS	POS.			
		OFF	* 1	* 2	* 3
1	1-1-1-2 1-1-1-3		X	X	X
2	4-1-1-4 4-1-1-5		X	X	X
3	5-1-1-6 5-1-1-7		X	X	X
4	8-1-1-8 8-1-1-9		X	X	X
5	10-1-1-10 10-1-1-11		X	X	X
6	13-1-1-12 13-1-1-13		X	X	X
7	14-1-1-14 14-1-1-15		X	X	X
8	16-1-1-16 16-1-1-17		X	X	X





SNAP-ACTION SWITCHES

ELECTROSWITCH	SNAP-ACTION SWITCH WORKSHEET																																																																																																																																																																																																																									
FEATURES:	ROTARY ACTION: <input type="checkbox"/> Maintained <input type="checkbox"/> Spring-return	ADDITIONAL REQUIREMENTS Number of Positions _____ Panel Thickness _____ Maximum Depth Behind Panel _____ <input type="checkbox"/> Waterproof Mount <input type="checkbox"/> Nameplate # _____																																																																																																																																																																																																																								
HANDLES <input type="checkbox"/> Oval Flush <input type="checkbox"/> Knurled <input type="checkbox"/> Double Ball <input type="checkbox"/> Pistol-Grip	CONTACTS: Nonshorting break-before-make Shorting Contacts make-before-break																																																																																																																																																																																																																									
TO SPECIFY A SWITCH NOT SHOWN ELSEWHERE: A. Fill out the Feature Section B. Indicate Handle Position C. (1) Complete switch position tabulation with contact closures or (2) List deck number and circuit required (example shown)																																																																																																																																																																																																																										
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <h3>SWITCH POSITION TABULATION</h3> <div style="border: 1px solid black; padding: 5px;"> <p>TITLE ENGRAVING:</p> <p style="text-align: right;">POSITIONS ENGRAVING</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="width: 20%;"></th> <th colspan="4">POSITIONS</th> </tr> <tr> <th colspan="2"></th> <th>1</th> <th>2</th> <th>2</th> <th>4</th> </tr> </thead> <tbody> <tr><td rowspan="10" style="writing-mode: vertical-rl; transform: rotate(180deg);">DECK</td> <td>CONTACTS HANDLE END</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table> </div> <div style="width: 45%;"> <h3>HANDLE POSITIONS</h3> <p style="text-align: center;">90°</p> <p>Deck # Circuit #</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>Example: Deck # Circuit # #1 #7</p> <p>Series 101 Max. 12 Decks Series 103 Max. 12 Decks Series 105 Max. 8 Decks Series 107 Max. 8 Decks</p> </div> <div style="width: 45%;"> <h3>CIRCUITS</h3> <div style="display: flex; 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ELECTRICAL RATINGS MAY BE AFFECTED BY SPRING-RETURN OPERATION		Circuits 2,3 & 4 require 2 decks per pole. Switch is viewed from handle end. Terminal numbers are preliminary pending factory review and approval.																																																																																																																																																																																																																								
MADE BY:	DATE:	COMPANY	DWG NO.																																																																																																																																																																																																																							
APPR BY:	DATE:		SHEET OF																																																																																																																																																																																																																							



CAM-ACTION ROTARY SWITCHES

OVERVIEW

Features

- Up to 12 Positions
- Up to 24 Poles
- Up to 800 Amperes Continuous Rating
- Excellent Horsepower Ratings for Motor Load
- Double Break Silver Alloy Contacts
- UL Listed & CSA Certified
- Most are available with the following features:
 - Waterproof mount
 - Key Operated
 - Spring Return
 - Padlockable
 - Key Interlock
 - Gear Operated
- Door Mount
- Base Mounting
- Single Hole Mount

Choose the switch that best suits your application

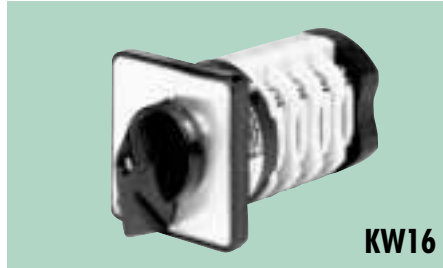
Electroswitch offers a wide variety of Cam-Action Rotary Switches designed to satisfy the most stringent Industrial requirements. In fact, we offer the world's most complete, tested, and proven line of Cam-Action Rotary Switches. The following is a quick description of each series.

Interrupt Ratings

MODEL	120 VAC	240 VAC	600 VAC	24 VDC
KW12	12A	12A	-	12A
KW16	16A	16A	16A	16A
KW20	20A	20A	-	20A
KW25	25A	25A	25A	25A
KW32	32A	32A	32A	32A
KW40	40A	40A	40A	40A
KW63	63A	63A	63A	63A
KW100	100A	100A	100A	100A
KW200	200A	200A	200A	200A
KW400	400 AMPS		CONTINUOUS	
KW600	600 AMPS		CONTINUOUS	
KW800	800 AMPS		CONTINUOUS	



KW12



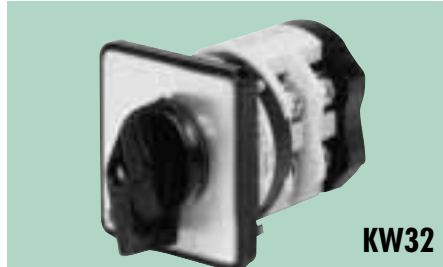
KW16



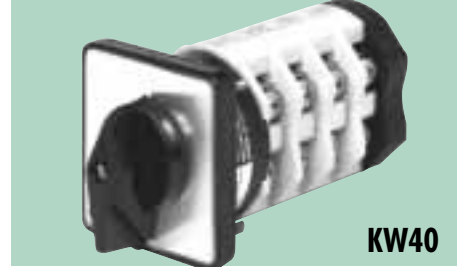
KW20



KW25



KW32



KW40



KW63



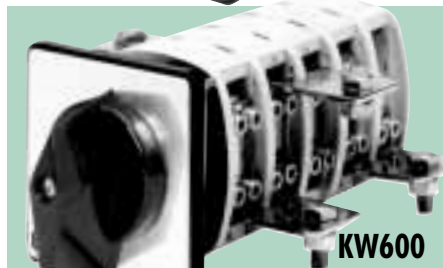
KW100



KW200



KW400



KW600



KW800



CAM-ACTION ROTARY SWITCHES

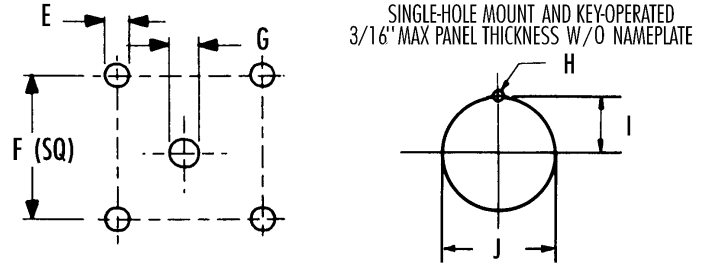
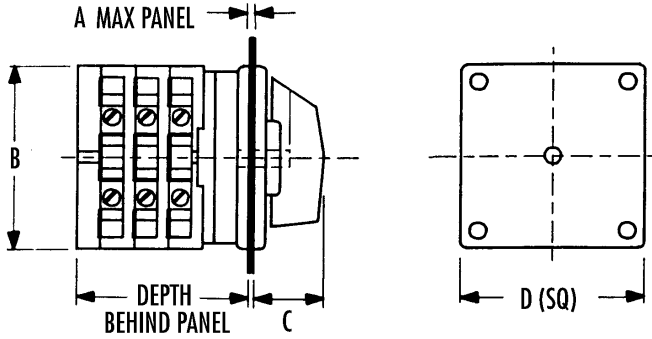
SPECIFICATIONS

CHARACTERISTICS	KW12	KW16	KW20	KW25	KW32	KW40	KW63	KW100	KW200	KW400	KW600	KW800
SECTIONS	1-12	1-12	1-12	1-12	1-12	1-12	1-12	1-12	1-12	2-12	3-12	4-12
POLES	1-24	1-24	1-24	1-24	1-24	1-24	1-24	1-24	1-24	1-12	1-8	1-6
POSITIONS	2-12	2-12	2-12	2-12	2-12	2-12	2-12	2-12	2-12	2-12	2-8	2-6
DETENT ANGLE	30, 45, 60, 90	30, 45, 60, 90	30, 45, 60, 90	30, 45, 60, 90	30, 45, 60, 90	30, 45, 60, 90	30, 45, 60, 90	30, 45, 60, 90	30, 45, 60, 90	30, 45, 60, 90	30, 45, 60, 90	30, 45, 60, 90
ELECTRICAL RATINGS												
Continuous Rating	20A - 240VAC	25A - 600VAC	25A - 240VAC	32A - 600VAC	40A - 600VAC	63A - 600VAC	80A - 600VAC	125A - 600VAC	200A - 600VAC	400A - 600VAC	600A - 600VAC	800A - 600VAC
Interrupt Ratings												
120VAC	12A	16A	20A	25A	32A	40A	63A	100A	200A	200A	200A	200A
240VAC	12A	16A	20A	25A	32A	40A	63A	100A	200A	200A	200A	200A
600VAC		16A	20A	25A	32A	40A	63A	100A	200A	200A	200A	200A
24VDC	12A	16A	20A	25A	32A	40A	63A	100A	200A	200A	200A	200A
Momentary Current 1 Second	275A	550A	407A	690A	725A	914A	2500A	3000A	4400A	4400A	4400A	4400A
Overload Current (50 Operations)												
240VAC	40.8A		91.2A	132A	168A	252A	324A	480A	924A	924A	924A	924A
600VAC		91.2A		102A	132A	168A	252A	312A	372A	372A	372A	372A
Dielectric Strength	1500VRMS	2200VRMS	1500VRMS	2200VRMS	2200VRMS	2200VRMS	2200VRMS	2200VRMS	2200VRMS	2200VRMS	2200VRMS	2200VRMS
Insulation Resistance	100 Megohms	100 Megohms	100 Megohms	100 Megohms	100 Megohms	100 Megohms	100 Megohms	100 Megohms	100 Megohms	100 Megohms	100 Megohms	100 Megohms
Contact Resistance	30 Milliohms	30 Milliohms	30 Milliohms	30 Milliohms	30 Milliohms	10 Milliohms	10 Milliohms	5 Milliohms	5 Milliohms	5 Milliohms	5 Milliohms	5 Milliohms
HORSEPOWER RATINGS												
3-Phase Ratings - Reduce by 1/2 for 1 Phase												
220/240VAC	2HP	5HP	5HP	7.5 HP	10 HP	15 HP	20 HP	30 HP	60 HP			
440/480VAC		10HP		15 HP	20 HP	25 HP	40 HP	50 HP	75 HP			
550/600VAC		10HP		15 HP	20 HP	25 HP	40 HP	50 HP	60 HP			
MOUNTINGS												
Single Hole	YES	YES	YES	YES	YES	YES						
2-Hole	YES	YES	YES	YES	YES	YES	YES	YES				
4-Hole	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Base Mount	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Waterproof Mount	YES	YES	YES	YES	YES	YES	YES	YES				
Door Mount	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
LOCKING FEATURES												
Key Interlock	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Padlock	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
SPECIAL DRIVES												
Key Operated	YES	YES	YES	YES	YES	YES						
Ganged Gear Operated	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Spring Return	YES	YES	YES	YES	YES	YES						
APPROVALS												
LISTED	LISTED	LISTED	LISTED	LISTED	LISTED	LISTED	LISTED	LISTED	RECOGNIZED			
UL Listed	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
CSA Certified	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES



CAM-ACTION ROTARY SWITCHES

DIMENSIONS



CAM-ACTION ROTARY SWITCH DIMENSIONS (INCHES)

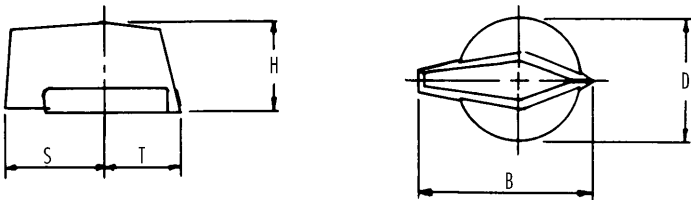
SERIES	A	B	C	D	E	F	G	H	I	J
KW12	.188	1.77	1.10	1.97	.18	1.42	.47	.118	.59	1.18
KW16	.188	2.36	1.22	2.56	.18	1.89	.47	.118	.59	1.18
KW20	.188	1.77	1.10	1.97	.18	1.42	.47	.118	.59	1.18
KW25	.188	2.36	1.22	2.56	.18	1.89	.47	.118	.59	1.18
KW32	.188	2.36	1.22	2.56	.18	1.89	.47	.118	.59	1.18
KW40	.188	2.36	1.22	2.56	.18	1.89	.47	.118	.59	1.18
KW63	.125	2.99	1.58	3.70	.22	2.68	.47	-	-	-
KW100	.125	3.30	1.58	3.70	.22	2.68	.47	-	-	-
KW200	.250	4.72 x 4.33	2.44	5.04	.26	4.25	.63	-	-	-
KW400	.250	4.72 x 4.33	2.44	5.04	.26	4.25	.63	-	-	-
KW600	.250	4.72 x 4.33	2.44	5.04	.26	4.25	.63	-	-	-
KW800	.250	4.72 x 4.33	2.44	5.04	.26	4.25	.63	-	-	-

DEPTH BEHIND PANEL DIMENSIONS

SERIES	NO. OF DECKS											
	1	2	3	4	5	6	7	8	9	10	11	12
KW12*	1.48	1.93	2.38	2.83	3.28	3.74	4.19	4.65	5.10	5.55	6.00	6.45
KW16*	1.95	2.51	3.07	3.63	4.19	4.75	5.31	5.86	6.43	6.98	7.54	8.10
KW20*	1.48	1.93	2.38	2.83	3.28	3.74	4.19	4.65	5.10	5.55	6.00	6.45
KW25*	1.95	2.51	3.07	3.63	4.19	4.75	5.31	5.86	6.43	6.98	7.54	8.10
KW32*	2.09	2.78	3.46	4.15	4.84	5.53	6.22	6.91	7.60	8.29	8.98	9.67
KW40*	2.09	2.78	3.46	4.15	4.84	5.53	6.22	6.91	7.60	8.29	8.98	9.67
KW63	2.43	3.22	4.00	4.79	5.58	6.37	7.15	7.94	8.73	9.52	10.30	11.09
KW100	2.80	3.86	4.92	5.96	7.01	8.07	9.10	10.16	11.22	12.26	13.31	14.37
KW200	3.74	5.31	6.89	8.46	10.04	11.61	13.19	14.76	16.34	17.91	19.49	21.06
KW400**	-	5.31	6.89	8.46	10.04	11.61	13.19	14.76	16.34	17.91	19.49	21.06
KW600**	-	5.31	6.89	8.46	10.04	11.61	13.19	14.76	16.34	17.91	19.49	21.06
KW800**	-	5.31	6.89	8.46	10.04	11.61	13.19	14.76	16.34	17.91	19.49	21.06

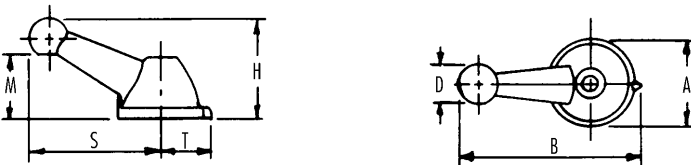
*For Single Hole Mount, increase dimensions on KW12 and KW20 by .12", and on KW16, 25, 32, and 40 by .52".
 For Key Operation, increase dimensions on KW12 and KW20 by .75", and on KW16, 25, 32, and 40 by 1.20".
 **Depth behind panel is determined by the current rating required and the paralleling of 200A decks. The switch cannot exceed 12 decks.
 Please contact factory in regard to your application.

FLUSH POINTER HANDLE



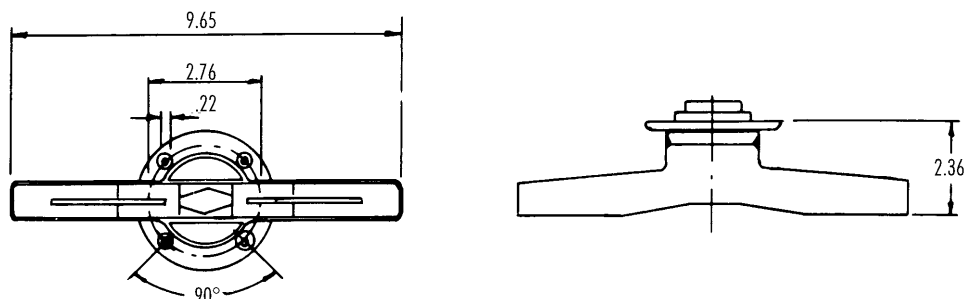
SERIES	HANDLE DIMENSIONS				
	D	H	T	S	B
KW12, 20	1.06	0.79	0.67	0.87	1.54
KW16, 25, 32, 40	1.42	0.99	0.83	1.14	1.97
KW63, 100	1.81	1.26	1.10	1.65	2.76
KW200-800	3.00	1.97	1.77	2.44	4.22

BALL TIP HANDLE



SERIES KW	HANDLE DIMENSIONS						
	S	T	B	M	H	A	D
16, 25, 32, 40	2.56	0.87	3.43	1.26	1.89	1.46	0.71
63-100	NOT AVAILABLE						
200-800	4.33	1.61	5.94	2.05	3.19	2.83	1.26

T - HANDLE, KW200 - 800 ONLY





CAM-ACTION ROTARY SWITCHES

ORDERING INFORMATION

You can order a Cam-Action Rotary Switch from Electroswitch using three different methods.

1. Using the Basic Numbering System
2. Using the Standard Switch Diagrams
3. Using Special Circuits
4. Using the X-Charts for Special Switches

ORDERING INFORMATION - Standard Numbering System

Model No. **KW** - -

Series		Circuit (See Page 34 for Limits. Use first two digits from part no. for circuit no.)	Off Position	No. of Poles (See Page 31 for Limits)	Handle Positions/Indexing (See Below)
12 = KW12	63 = KW63	11 = Circuit 11	0 = Yes	1 = 1 2 = 12	A1, A4, A6, A8,
16 = KW16	100 = KW100	22 = Circuit 22	1 = Yes (with 10 or more poles)	2 = 2 4 = 14	B1, B4, B6, B8,
20 = KW20	200 = KW200	23 = Circuit 23	2 = Yes (with 20 or more poles)	3 = 3 6 = 16	C1, C4, C6, C8,
25 = KW25	400 = KW400	24 = Circuit 24	5 = No	4 = 4 8 = 18	D6,
32 = KW32	600 = KW600	25 = Circuit 25	6 = No (with more than 10 poles)	5 = 5 0 = 20	S1, S3, S9
40 = KW40	800 = KW800	26 = Circuit 26		6 = 6 2 = 22	
		27 = Circuit 27		8 = 8 4 = 24	
		28 = Circuit 28		0 = 10	
		29 = Circuit 29			
		40 = Circuit 40			
		41 = Circuit 41			
		42 = Circuit 42			

For Minor Deviations from Standard Diagrams. Dash Numbers will be Assigned by Electroswitch.

ORDERING INFORMATION - Using Typical Switch Diagrams

Model No. **KW** - -

Series		Standard Circuit Numbers (See Page 35)	For Deviations from Standard Diagrams. Dash Numbers will be Assigned by Factory.
12 = KW12	63 = KW63		
16 = KW16	100 = KW100		
20 = KW20	200 = KW200		
25 = KW25	400 = KW400		
32 = KW32	600 = KW600		
40 = KW40	800 = KW800		

ORDERING INFORMATION - For Special Circuits & Contacting

Model No. **KW** **Cam X-Chart on Page 36 Must be Filled Out by Customer. A Part Number will be Assigned by Electroswitch.**

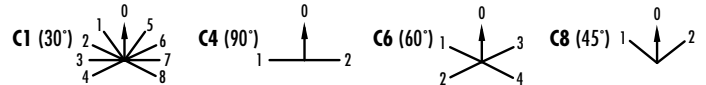
Series	
12 = KW12	63 = KW63
16 = KW16	100 = KW100
20 = KW20	200 = KW200
25 = KW25	400 = KW400
32 = KW32	600 = KW600
40 = KW40	800 = KW800

ORDERING INFORMATION - Handle Position and Indexing

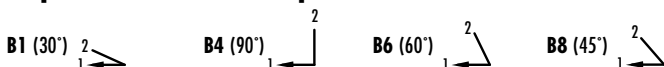
1st position 0° next position clockwise



For 3, 5, 7, and 9 positions, Switch's only rotation is across the top. Center position is 0°.



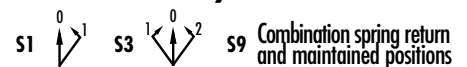
1st position 270° next position clockwise



2 positions only



Return 30° only



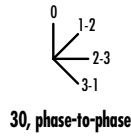
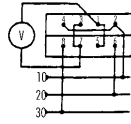


CAM-ACTION ROTARY SWITCHES

TYPICAL SWITCH DIAGRAMS - Assembled jumpers supplied as shown on circuits below

CIRCUIT 701 Voltmeter Transfer Switch

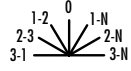
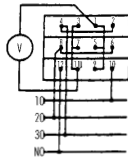
DECK	CONTACTS	POSITIONS		
		OFF	1-2	2-3
1	1 O-1-1-02		X	X
	3 O-1-1-04		X	X
2	5 O-1-1-06		X	X
	7 O-1-1-08		X	X



30, phase-to-phase

CIRCUIT 705 Voltmeter Transfer Switch

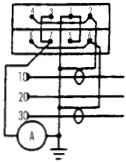
DECK	CONTACTS	POSITIONS					
		3-1	2-3	1-2	OFF	1-N	2-N
1	1 O-1-1-02	X	X				X
	3 O-1-1-04	X	X				X
2	5 O-1-1-06		X	X			X
	7 O-1-1-08		X	X			X
3	9 O-1-1-10			X	X		X
	11 O-1-1-12			X	X		X



30, phase-to-phase and phase-to-neutral

CIRCUIT 724 Ammeter Transfer Switch

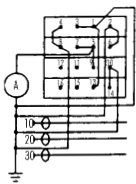
DECK	CONTACTS	POSITIONS			
		0	1	2	3
1	1 O-1-1-02	X			X
	3 O-1-1-04	X			X
2	5 O-1-1-06		X		X
	7 O-1-1-08		X		X



30, 2 CT

CIRCUIT 731 Ammeter Transfer Switch

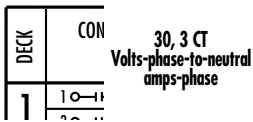
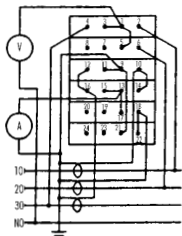
DECK	CONTACTS	POSITIONS			
		0	1	2	3
1	1 O-1-1-02	X			X
	3 O-1-1-04	X			X
2	5 O-1-1-06		X		X
	7 O-1-1-08		X		X
3	9 O-1-1-10			X	X
	11 O-1-1-12			X	X
4	13 O-1-1-14				X
	15 O-1-1-16				X



30, 3 CT

CIRCUIT 743 Voltmeter/Ammeter Transfer Switch

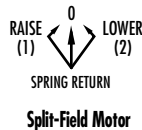
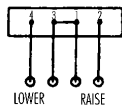
DECK	CONTACTS	POSITIONS			
		0	1	2	3
1	1 O-1-1-02	X			X
	3 O-1-1-04	X			X
2	5 O-1-1-06		X		X
	7 O-1-1-08		X		X
3	9 O-1-1-10			X	X
	11 O-1-1-12			X	X
4	13 O-1-1-14				X
	15 O-1-1-16				X
5	17 O-1-1-18				X
	19 O-1-1-20				X
6	21 O-1-1-22				X
	23 O-1-1-24				X



30, 3 CT
Volts-phase-to-neutral
amps-phase

CIRCUIT 405 Motor Control Switch

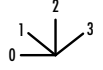
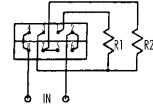
DECK	CONTACTS	POSITIONS	
		1	2
1	1 O-1-1-02	X	
	3 O-1-1-04		X



Split-Field Motor

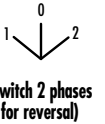
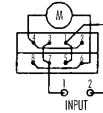
CIRCUIT 614 Heater Control Switch

DECK	CONTACTS	POSITIONS			
		0	1	2	3
1	1 O-1-1-02	X	X	X	X
	3 O-1-1-04	X	X	X	X
2	5 O-1-1-06	X	X	X	X
	7 O-1-1-08	X	X	X	X



CIRCUIT 101 Motor Reversing Switch

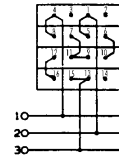
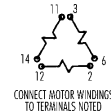
DECK	CONTACTS	POSITIONS		
		1	0	2
1	1 O-1-1-02	X		
	3 O-1-1-04		X	
2	5 O-1-1-06		X	
	7 O-1-1-08	X		X



(switch 2 phases for reversal)

CIRCUIT 300 Motor-Starting Switch

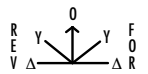
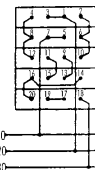
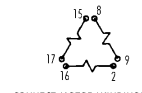
DECK	CONTACTS	POSITIONS		
		0	Y	Δ
1	1 O-1-1-02	X		
	3 O-1-1-04	X		
2	5 O-1-1-06		X	
	7 O-1-1-08		X	
3	9 O-1-1-10			X
	11 O-1-1-12			X
4	13 O-1-1-14			X
	15 O-1-1-16			X



Y-Δ start
single-speed
non-reversing

CIRCUIT 302 Motor-Starting Switch

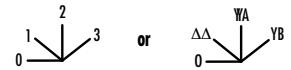
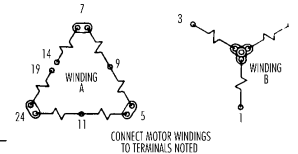
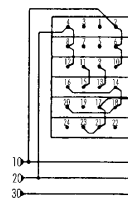
DECK	CONTACTS	POSITIONS				
		Δ	Y	0	Y	Δ
1	1 O-1-1-02	X				
	3 O-1-1-04	X				
2	5 O-1-1-06		X			
	7 O-1-1-08		X			
3	9 O-1-1-10			X		
	11 O-1-1-12			X		
4	13 O-1-1-14				X	
	15 O-1-1-16				X	
5	17 O-1-1-18					X
	19 O-1-1-20					X



Y-Δ start
single-speed
forward/reverse

CIRCUIT 372 Motor-Starting Switch

DECK	CONTACTS	POSITIONS			
		0	1	2	3
1	1 O-1-1-02	X			
	3 O-1-1-04	X			
2	5 O-1-1-06		X		
	7 O-1-1-08		X		
3	9 O-1-1-10			X	
	11 O-1-1-12			X	
4	13 O-1-1-14				X
	15 O-1-1-16				X
5	17 O-1-1-18				X
	19 O-1-1-20				X
6	21 O-1-1-22				X
	23 O-1-1-24				X



Non-reversing 3-speed
(for use with motors
with double windings)



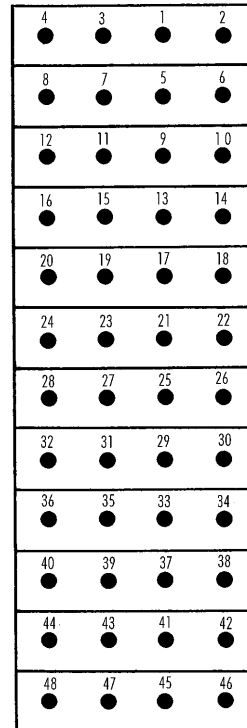
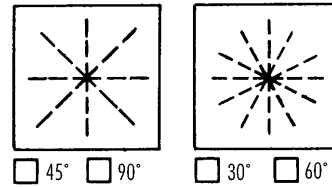
CAM-ACTION ROTARY SWITCHES

ELECTROSWITCH	KW _____	Switch Number _____	REV _____
FEATURES:		ADDITIONAL REQUIREMENTS	
HANDLES <input type="checkbox"/> Flush Pointer <input type="checkbox"/> Ball Tip <input type="checkbox"/> Pistol-Grip <input type="checkbox"/> T-Handle <small>200A-800A ONLY</small>	ROTARY ACTION: <input type="checkbox"/> Maintained <input type="checkbox"/> Spring-return	Panel Thickness _____ Maximum Depth Behind Panel Allowable _____ <input type="checkbox"/> Single-Hole Mount <input type="checkbox"/> Key Operated Key Removable in _____ <input type="checkbox"/> Key-interlock <input type="checkbox"/> Push-to-Turn <input type="checkbox"/> Nameplate # _____	
		CONTACTS: <input type="checkbox"/> Nonshorting break-before-make <input checked="" type="checkbox"/> Shorting Contacts make-before-break	

TITLE ENGRAVING	POSITION ENGRAVING																								
	<table border="1" style="width:100%; height: 40px; border-collapse: collapse;"> <tr> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> </tr> </table>																								
DECK	CONTACTS HANDLE END	POSITIONS																							
		1	2	3	4	5	6	7	8	9	10	11	12												
1	1 ○— — ○ 2 3 ○— — ○ 4																								
2	5 ○— — ○ 6 7 ○— — ○ 8																								
3	9 ○— — ○ 10 11 ○— — ○ 12																								
4	13 ○— — ○ 14 15 ○— — ○ 16																								
5	17 ○— — ○ 18 19 ○— — ○ 20																								
6	21 ○— — ○ 22 23 ○— — ○ 24																								
7	25 ○— — ○ 26 27 ○— — ○ 28																								
8	29 ○— — ○ 30 31 ○— — ○ 32																								
9	33 ○— — ○ 34 35 ○— — ○ 36																								
10	37 ○— — ○ 38 39 ○— — ○ 40																								
11	41 ○— — ○ 42 43 ○— — ○ 44																								
12	45 ○— — ○ 46 47 ○— — ○ 48																								

*DENOTES MAKE-BEFORE-BREAK CONTACTS

HANDLE POSITIONS



When jumpering from terminal to terminal, please try and prevent from jumpering diagonally or over terminals where possible.

Show only jumpers to be supplied.

MADE BY:	DATE:	COMPANY	DWG NO.
APPR BY:	DATE:		SHEET _____ OF _____



HEAVY-DUTY 1,2 & 3 PHASE ROTARY TAP SWITCHES POWER SWITCHES FOR INDUSTRY

100 Thru 5000 Ampere, Single Phase
100 Thru 2500 Ampere, Two or Three Phase
NON-LOAD BREAK 600 Volt, 60 Hertz AC 600 Volt DC

Types S1, T2 & T3 Heavy-Duty Rotary Tap Switches are complete units with escutcheon plates and appropriate safety handles. They are long operating life, low maintenance switching devices, specifically designed for the severe conditions of industrial use. They feature low operating torque; high pressure line contact; flame retardant, non-tracking insulation; and precision made non-ferrous parts. All current carrying parts of 200 ampere switches and larger are heavy silver plated. Switches up to the 1000 ampere size feature glass fibre reinforced molded bases for high strength, precision contact alignment, and light weight.

DUAL CURRENT RATING

Types S1, T2 & T3 Heavy-Duty Rotary Tap Switches are dual rated for both continuous and intermittent duty: Continuous/intermittent.

Continuous Current Rating is based upon a 40°C temperature rise and a 40°C ambient.

Intermittent Current Rating is based upon a 40°C temperature rise, a 40°C ambient, a 50 percent duty cycle, and a one-minute integrating time.

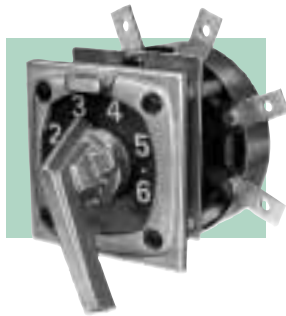
SINGLE, TWO OR THREE PHASE

Molded Base Switch	Fabricated Base Switch
Dual Ampere Rating	Dual Ampere Rating
100/150	800/1200
200/300	1200/1800
400/600	1600/2400
600/900	Ampere Rating
800/1200	2000
1000/1500	3000
	5000 - Single Phase Only

2000, 3000 and 5000 ampere Heavy-Duty Rotary Tap Switches are custom designed and manufactured for each specific application. They provide the same fine materials, workmanship and quality as the lower ampere switches and feature custom design, low operating torque, high pressure line contact, fabricated insulated bases, precision made non-ferrous silver plated parts. Along with the 800, 1200 and 1600 ampere switches, they have built-in rotor lubrication systems.

All switches are supplied with escutcheon and handles. The handles have a provision for two padlocks as a standard feature.

Molded Base Switches

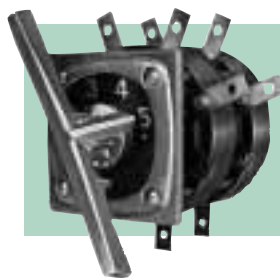


Type S1 Molded Base

Single Phase Rotary Tap Switch or Series/Parallel Switch with an Auxiliary Switch, 45° Terminals, 90° Terminals or any combination of Auxiliary Switch, 45° & 90° Terminals.

Mechanical Release, any combination of Auxiliary Switch, 45° & 90° Terminals.

Provision for Key Interlock with 45° or 90° Terminals.

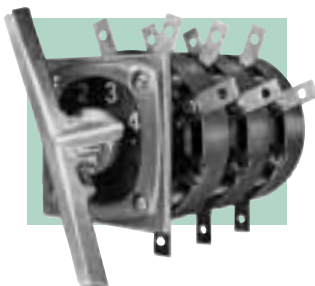


Type T2 Molded Base

Two Phase Rotary Tap Switch or Series/Parallel Switch with an Auxiliary Switch, 45° Terminals, 90° Terminals or any combination of Auxiliary Switch, 45° & 90° Terminals.

Mechanical Release, any combination of Auxiliary Switch, 45° & 90° Terminals.

Provision for Key Interlock with 45° or 90° Terminals.



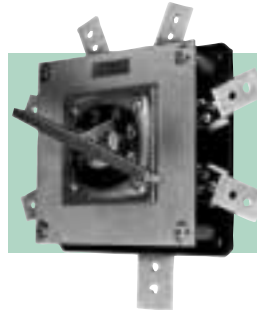
Type T3 Molded Base

Three Phase Rotary Tap Switch or Series/Parallel Switch with an Auxiliary Switch, 45° Terminals, 90° Terminals, or any combination of Auxiliary Switch, 45° or 90° Terminals.

Mechanical Release, any combination of Auxiliary Switch, 45° or 90° Terminals.

Provision for Key Interlock with 45° or 90° Terminals.

Fabricated Base Switches



Type SF1 Fabricated Base

Single Phase Rotary Tap Switch or Series/Parallel Switch with an Auxiliary Switch, 45° and 90° Terminals, or any combination of Auxiliary Switch, 45° or 90° Terminals.

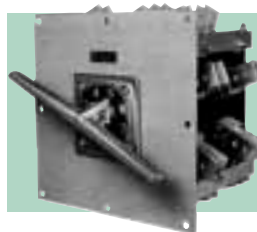
Mechanical Release, any combination of Auxiliary Switch, 45° & 90° Terminals.

Key Interlock Provision - 1" bolt projection when withdrawn - Type "F" - 3/4 travel supplied by customer.

Notes: 1. Key Interlock to lock switch in closed position.

2. Bolt extended - key free - cannot change positions.

3. Bolt withdrawn - key held - can change positions.

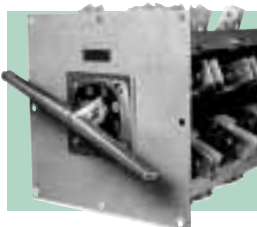


Type TF2 Fabricated Base

Two Phase Rotary Tap Switch or Series/Parallel Switch with an Auxiliary Switch, 45° Terminals, or any combination of Auxiliary Switch, 45° Terminals.

Mechanical Release, any combination of Auxiliary Switch, 45° Terminals.

Provision for Key Interlock with 45° Terminals.



Type TF3 Fabricated Base

Three Phase Rotary Tap Switch or Series/Parallel Switch with an Auxiliary Switch, 45° Terminals, or any combination of Auxiliary Switch, 45° Terminals.

Mechanical Release, any combination of Auxiliary Switch, 45° Terminals.

Provision for Key Interlock with 45° Terminals.



TAP SWITCHES

ORDERING INFORMATION

STANDARD OPTIONS

Designated Code

X "OFF" Position

An "OFF" Position is available in place of one contact position. Add the suffix "X" to catalog number. Eight total switch positions, "OFF" included, is the maximum on molded base.

8HV Increased Operating Voltage to 800 volts

12HV Increased to 1200 volts

45 or 90 Angled Terminals

All switches are supplied with straight clips and rotor strap as standard. To obtain 45 degree or 90 degree clips and rotor strap, add the suffix "-45" or "-90" to the catalog number.

S Auxiliary Switch

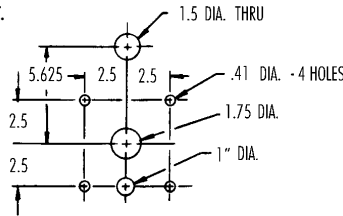
A single pole, double throw 15 amp at 480VAC auxiliary switch actuated by the rotary tap switch mechanism is available for remote indication purposes. Add the suffix "-S" to the catalog number.

MR Mechanical Release

Provides a separate spring loaded handle which must be withdrawn to permit operation on main handle of switch to the next tap position. Actuation of the mechanical release operates an auxiliary switch (SPDT - 15 amp at 480VAC) which can be wired into the control circuit to assure the tap switch is operated in a NO-LOAD condition. To obtain mechanical release option, add the suffix "-MR" to the catalog number.

L Key Interlock Provision

Provisions can be provided for customer addition of a Type F, 1-inch bolt-projection when withdrawn, 3/4-inch travel, Key Interlock to prevent unauthorized switch operation on all types of switches. Add the suffix "-L" to the catalog number.



PANEL DRILLING

SPECIAL OPTIONS

Dial Plate

Standard switches are supplied with numbers. We can supply letters, different numbers, etc.

Handles

Type S1, single phase, are supplied with pistol grip handles. Type T2 & T3, tandem 2 or 3 phase switches, are supplied with "T" Handles. Type S1 could be supplied with "T" Handle, low profile. Type T2 & T3 could be supplied with pistol grip handle.

Terminals

All switches are supplied with straight clips and rotor straps as standard. We can supply straight clips and angled rotor strap.

Increased Operating Voltage

Standard switches are rated 600 volt. We can supply 1200, 2400, 4160, 4800, etc.

There are no designated codes for special optional features other than "-Z". Special features must be written on purchase order.

Combinations

Switches can be supplied with:
More than one Auxiliary Switch
More than one Key Interlock Provision

Combination of Mechanical Release with Key Interlock, Mechanical Release with extra Auxiliary Switches, etc. To obtain these options, add suffix "-MR", "-2S", "-2L", etc.

In addition, our switches feature manual operators or motor operators. Standard motor operators are uni-directional controlled. Reversing control is available.

Special Applications

The basic design of Heavy-Duty Rotary Tap Switches lends itself to numerous special modifications and arrangements; increased operating voltages, series/parallel switching, wye-delta switching, generator winding controls, high frequency switching, motor reversing, polarity reversing, etc.

Consult the factory for your particular application. Our staff of engineering and marketing specialists are at your service.

Model No.

Series	Current Rating	Active Contact Positions	Option Suffixes
S1 or SF1 = Single Phase, Handle Operated	10 = 100/200 Amps	2 = 2	Example, X = Off
T2 or TF2 = Two Phase	40 = 400/600 Amps	3 = 3	See Above for a complete
T3 or TF3 = Three Phase	80 = 800 Amps	4 = 4	list of options
W1 = Single Phase, Welder Handle, No Nameplate	100 = 1000 Amps	5 = 5	
SW1 = Single Phase, Welder Handle, Nameplate	120 = 1200 Amps	6 = 6	
	160 = 1600 Amps	7 = 7	
		8 = 8	

NOTE: Use shaded boxes only when needed.

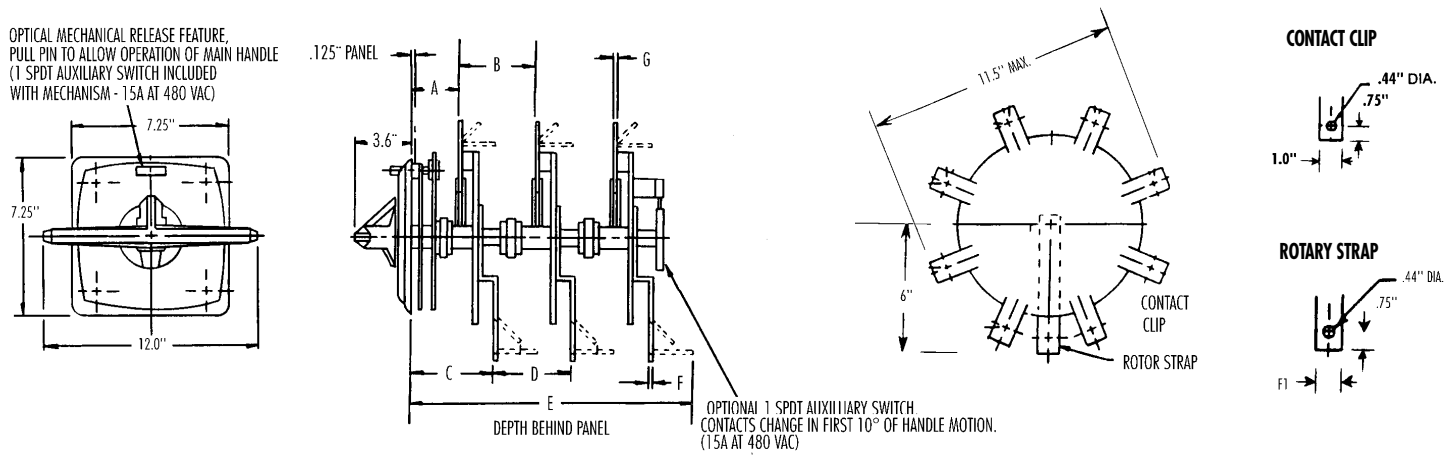


MOLDED BASE TAP SWITCHES

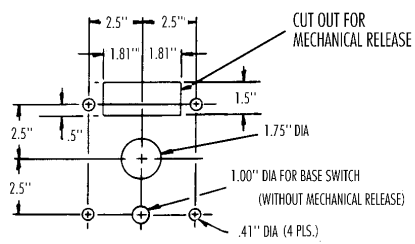
DIMENSIONAL DRAWINGS

S1, T2, & T3 NON-LOAD BREAK TAP SWITCHES

Shown as basic switch with options of: 45° or 90° terminals, auxiliary switch, mechanical release.



PANEL DRILLING DIMENSIONS

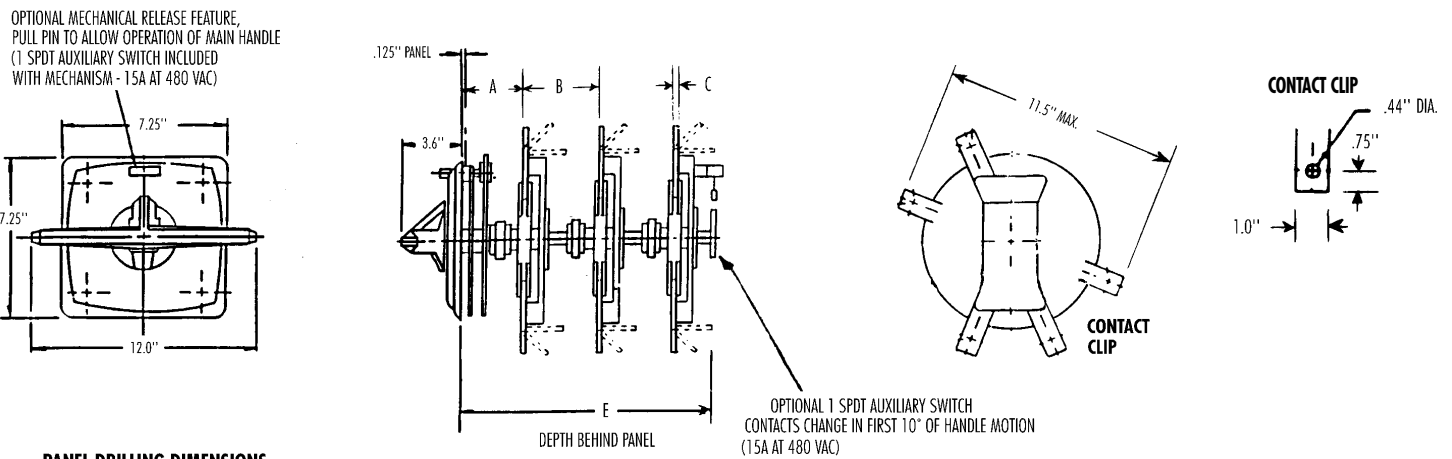


AMPS	A*	B	C	D	F	FI	G	E-MAX*		
								S1	T2	T3
100/200	2.06	3.63	3.88	3.63	0.13	1.0	0.13	5.00	8.63	12.30
400/600	2.06	4.13	4.00	4.13	0.19**	1.5	0.25	5.00	9.32	13.39
800	2.38	5.06	4.56	5.06	0.25	2.5	0.25	6.56	11.63	16.69
1000	2.38	4.63	4.44	4.63	0.38	2.5	0.38	6.25	11.31	16.38

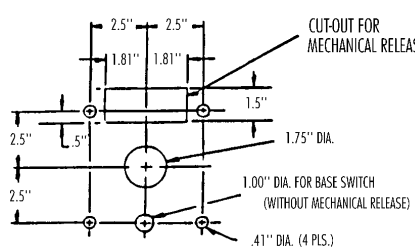
* Add 2.00" for Mechanical Release
 ** 0.13" for 400 Amp.

S1, T2, & T3 SERIES/PARALLEL - 1, 2 & 3 PHASE SWITCHES

Shown as basic switch with options of: 45° or 90° terminals, auxiliary switch, mechanical release.



PANEL DRILLING DIMENSIONS



AMPS	A*	B	C	E-MAX*		
				S1	T2	T3
100/200	2.06	3.63	0.13	5.00	8.63	12.25
400/600	2.06	3.75	0.25	5.00	9.00	12.75
800	2.69	5.06	0.25	6.31	11.38	16.44
1000	2.56	5.00	0.38	6.00	11.06	16.13

* Add 2.00" for Mechanical Release



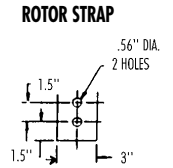
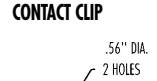
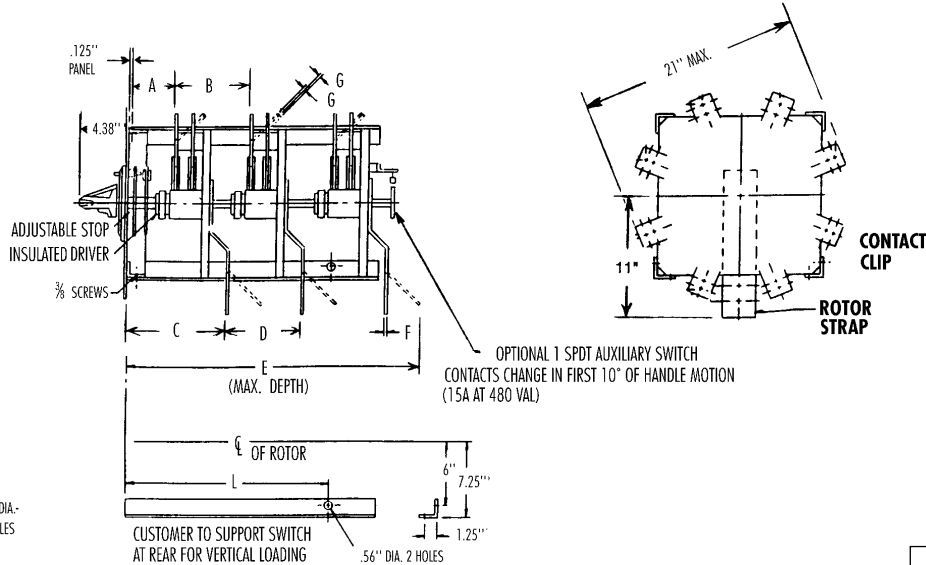
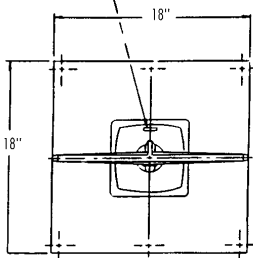
FABRICATED BASE TAP SWITCHES

DIMENSIONAL DRAWINGS

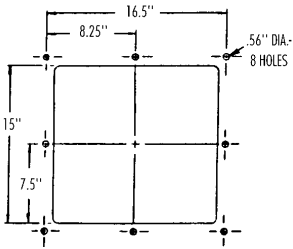
SF1, TF2, & TF3 1, 2 & 3 PHASE SWITCHES

Shown as basic switch with options of: 45° terminals, auxiliary switch, mechanical release.

OPTIONAL MECHANICAL RELEASE FEATURE.
PULL PIN TO ALLOW OPERATION OF MAIN HANDLE
(1 SPDT AUXILIARY SWITCH INCLUDED
WITH MECHANISM - 15A AT 480 VAC)



PANEL DRILLING DIMENSIONS



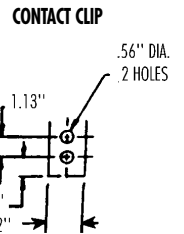
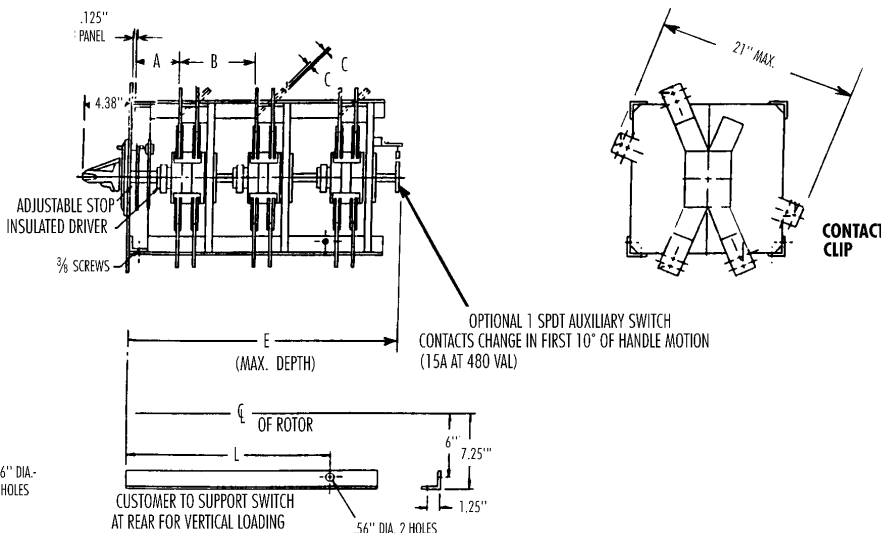
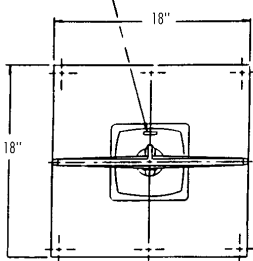
AMPS	A*	B	C	D	F	G	E-MAX*		
							SF1	TF2	TF3
1200	2.56	5.69	7.38	7.19	0.25	0.25	10.88	18.38	25.63
1600	2.25	5.56	7.44	7.31	0.38	0.38	11.13	18.50	25.75
						L →	NONE	8.94	16.00

* Add 2.00" for Mechanical Release

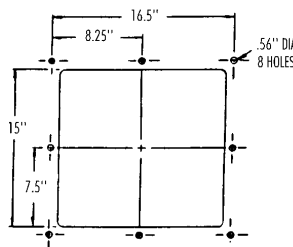
SF1, TF2, & TF3 SERIES/PARALLEL - 1, 2 & 3 PHASE SWITCHES

Shown as basic switch with options of: 45° terminals, auxiliary switch, mechanical release.

OPTIONAL MECHANICAL RELEASE FEATURE.
PULL PIN TO ALLOW OPERATION OF MAIN HANDLE
(1 SPDT AUXILIARY SWITCH INCLUDED
WITH MECHANISM - 15A AT 480 VAC)



PANEL DRILLING DIMENSIONS



AMPS	A*	B	C	E-MAX*		
				SF1	TF2	TF3
1200	2.44	5.88	0.25	8.56	15.88	23.25
1600	2.50	5.94	0.38	8.88	16.38	24.13
			L →	NONE	9.25	16.63

* Add 2.00" for Mechanical Release



TAP SWITCHES

NOTES/NAMEPLATES/CONNECTION DIAGRAMS

NOTES

1. Mechanical Release - Pull pin before operating main handle (* 1-SPDT auxiliary switch included with mechanism - 15A at 480VAC)
2. 1-SPDT Auxiliary Switch, contacts change in first 10° of handle motion. 15A at 480VAC
3. Customer Note:
To install switch, remove (8) 3/8-16 hex head cap screws from side of angle frame. Remove subplate assembly from angle frame, insulated driver should be removed from first deck rotor with subplate assembly (keep adjustable stops in proper position).

Caution:

Do not remove adjustable stops from subplate assembly when removing subplate assembly from switch. Place subplate assembly on front of customer mounting panel and bolt in place with 8 bolts. Place switch behind customer mounting panel and bolt (8) 3/8-16 hex head cap screws in angle frame. Care should be exerted to completely line switch up to prevent unnecessary binding of assembly. Install rear support to back of switch support angles.

NAMEPLATE DRAWINGS

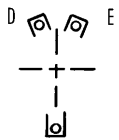
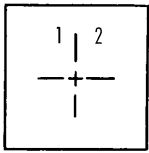


FIG. 1

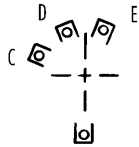
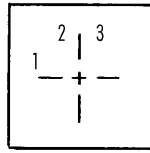


FIG. 2

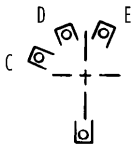
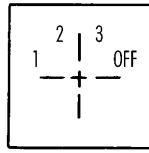


FIG. 3

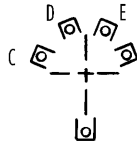
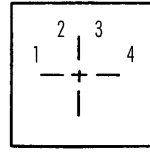


FIG. 4

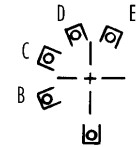
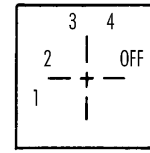


FIG. 5

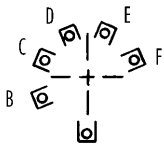
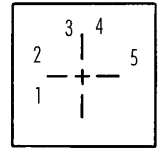


FIG. 6

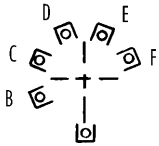
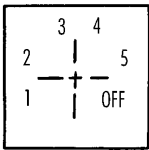


FIG. 7

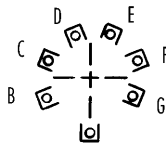
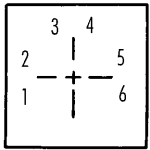


FIG. 8

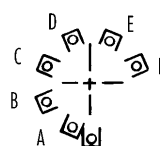
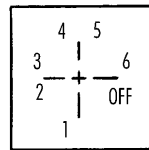


FIG. 9

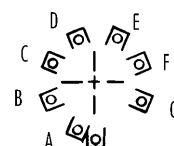
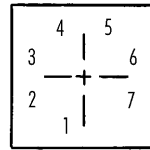


FIG. 10

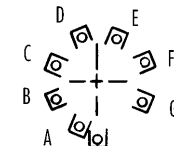
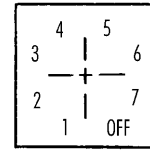


FIG. 11

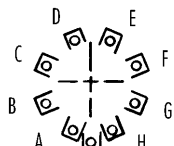
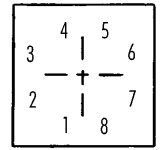
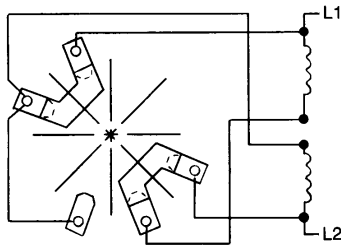
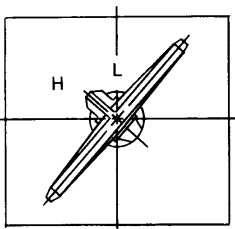
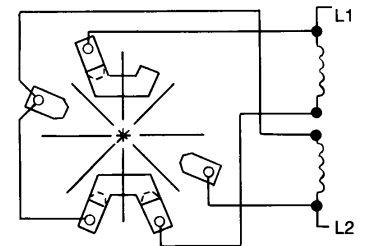
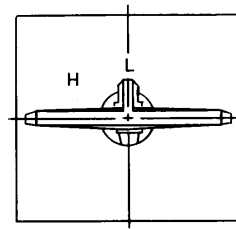


FIG. 12

SERIES/PARALLEL CONNECTION DIAGRAM



PARALLEL



SERIES



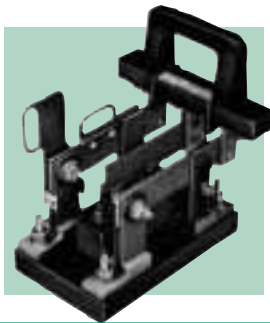
KNIFE SWITCHES OVERVIEW

Type A & DL Heavy Duty Knife Switches Power Switches for Industry

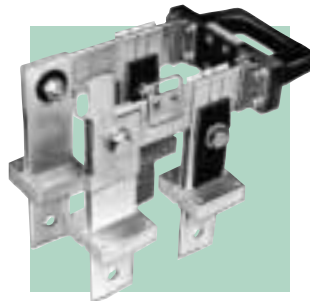
30 Thru 3000 Ampere Front Connected
30 Thru 10,000 Ampere Back Connected Non-Fused
NON-LOAD BREAK
480 to 600 Volt, 60 Hertz AC
250 to 600 Volt DC

2000 ampere thru 3000 ampere front and back connected (limited to 4 pole switch)
4000 ampere back connected (limited to 3 pole switch)
6000 ampere (limited to 2 pole switch)
8000 and 10,000 ampere (limited to single pole switch)
All switches can be single or double throw.

Current Rating: All Type A and Type DL Heavy Duty Knife Switches are rated for continuous operation based upon a 40°C temperature rise and a 40°C ambient.



Type A Heavy Duty Knife Switches are front connected units complete with molded handles and insulated bases. They are long operating life, low maintenance switching devices, specifically designed for the severe conditions of industrial use. They feature low operating effort design, standardized dimensions, soldered and silver plated construction, adjustable contacts, and Saf-T-Gard handles.



Type DL Heavy Duty Knife Switches are similar to Type A except they are back connected units without base plates. The 30, 60, 100, 200, 300 and 400 ampere sizes utilize stud connections, and the 600 ampere and larger sizes utilize bus bar connections.

AMPERE RATING Front Connected		AMPERE RATING Back Connected	
30	1600	30	1600
60	2000	60	2000
100	2500	100	2500
200	3000	200	3000
300		300	4000
400		400	6000
600		600	8000
800		800	10000
1200		1200	

SPECIAL APPLICATIONS

The basic design of the Types A and DL Knife Switch lends itself to numerous special modifications and arrangements, polarity reversals, high frequency, high voltage, air operated, remote manual operation, high current, field discharge, etc.

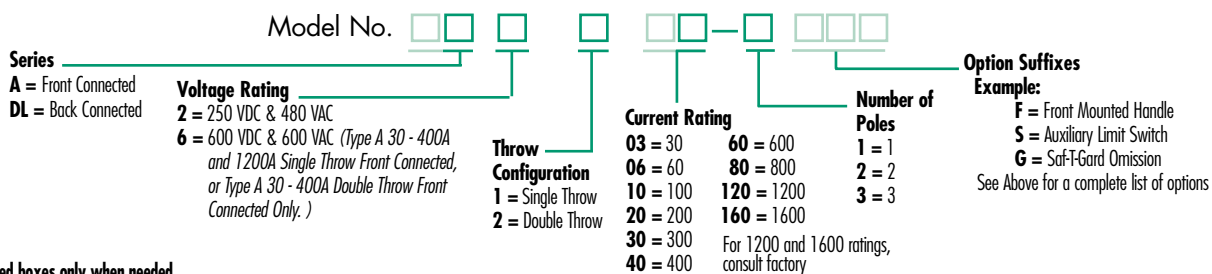
Options

Designated Code

- P PADLOCK ATTACHMENT**
A padlock attachment and associated 90 degree stop are available on single throw switches only. Add the suffix "- P" to the catalog number. A padlock attachment is available on double throw switches (lockable in open position only). Add the suffix "- P" to the catalog number.
- F HANDLE LOCATION**
Single throw switches can be provided by the operating handle mounted on the front of the blade. Add the suffix "- F" to the catalog number.
- K AUXILIARY KNIFE SWITCH**
An auxiliary, low-current knife switch actuated simultaneously with the main knife switch is available for remote indication purposes. Add the suffix "- K" to the catalog number.
- S AUXILIARY LIMIT SWITCH**
A single pole - double throw limit switch actuated by the knife switch is available for remote indication purposes. Add the suffix "- S" to the catalog number.

- G HANDLE GUARD OMISSION**
The hand Saf-T-Gard is provided as a standard accessory on 600 volt switches. It can be omitted for applications where it will interfere with normal switch operation. For guard omission, add the suffix "- G" to the catalog number.
- GG HANDLE GUARD**
A hand Saf-T-Gard can be provided on 250/480V switches as an option. Add the suffix "- GG" to the catalog number.
- FD FIELD DISCHARGE**
Field Discharge attachment, used when opening a generator field. Add the suffix "- FD" to the catalog number.

***All switches rated ABOVE 600 volts are provided with hand Saf-T-Gard as a standard feature. No switches above 600 volt will be provided without this accessory.**



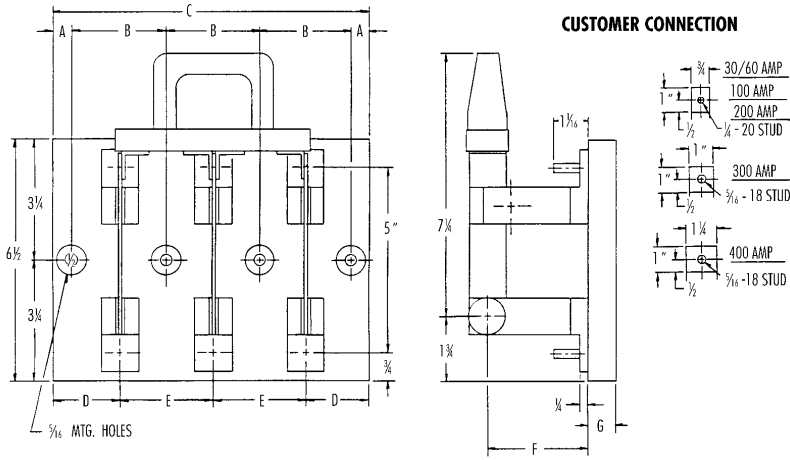
NOTE: Use shaded boxes only when needed.



KNIFE SWITCHES

TYPE A SINGLE THROW

Type A, Single Throw, Front Connected Knife Switches (30 Amp - 400 Amp)

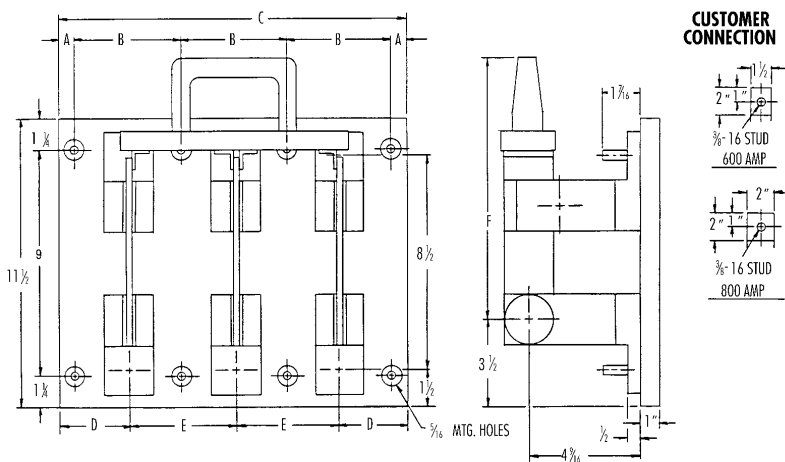


250 VDC / 480 VAC										
30, 60, 100, 200, 300, & 400 AMP							600 AMP	800 AMP	NO OF	
POLES	A	B	C	D	E	G	F	F	MTG. HOLES	
SINGLE	.5	2.5	3.5	1.75	-	.75	2.19	2.81	2	
TWO	.5	2.5	6	1.75	2.5	.75	2.19	2.81	3	
THREE	.5	2.5	8.5	1.75	2.5	.75	2.19	2.81	4	

600VDC/AC*	
30 - 400 AMP	
POLES	G
SINGLE	1
TWO	1
THREE	1

* Insulation Red Polyglass
NOTE: 30, 60 & 100 Amp parts bright dipped.
200 Amp & above silver plated.

Type A, Single Throw, Front Connected Knife Switches (600 and 800 Amp)



250 VDC / 480 VAC*							
600 & 800 AMP							NO OF
POLES	A	B	C	D	E	F	MTG. HOLES
SINGLE	.63	4.25	5.5	2.75	-	9.25	4
TWO	.63	4.25	9.75	2.75	4.25	10.13	6
THREE	.63	4.25	14	2.75	4.25	10.25	8

* 600 VDC/AC, Insulation Red Polyglass
NOTE: 600 & 800 Amp parts silver plated.

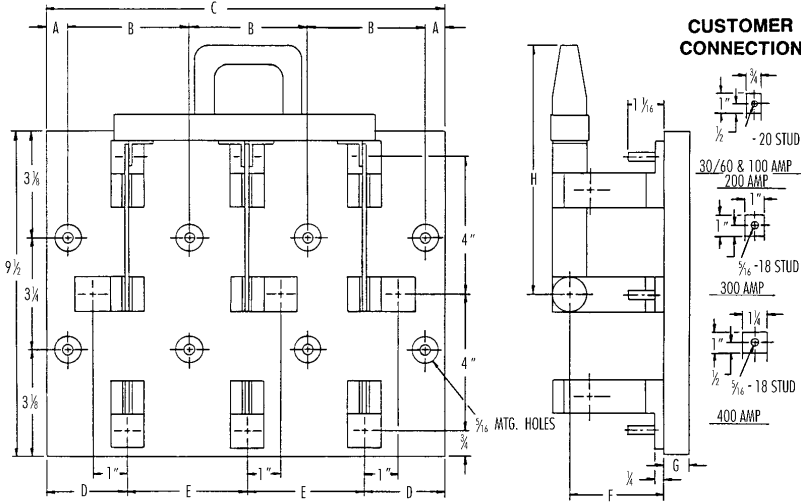
1200 Amp or Greater Contact Factory



KNIFE SWITCHES

TYPE A DOUBLE THROW

Type A, Double Throw, Front Connected Knife Switches (30 Amp - 400 Amp)

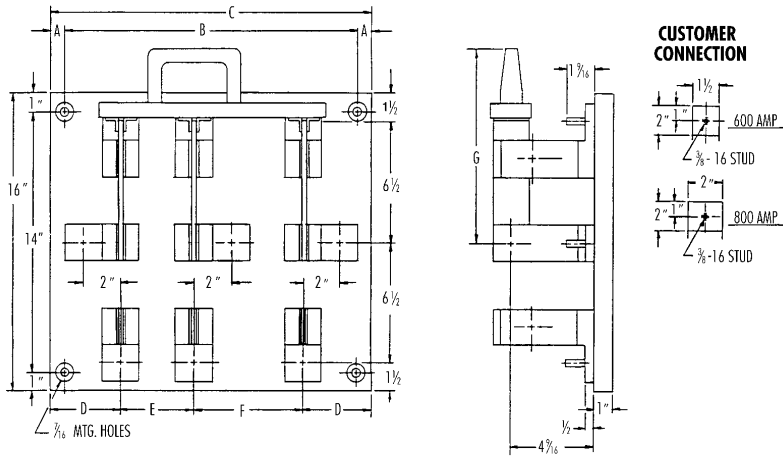


250 VDC / 480 VAC										
30, 60, 100, 200, 300, & 400 AMP							30, 60 AMP	100 - 400 AMP	NO OF	
POLES	A	B	C	D	E	G	H	F	F	MTG. HOLES
SINGLE	.63	3.5	4.75	2.38	-	.75	7.25	2.19	2.81	4
TWO	.63	3.5	8.25	2.88	2.5	.75	7.25	2.19	2.81	6
THREE	.63	3.5	11.75	2.38	3.5	.75	7.38	2.19	2.81	6

600VDC/AC*	
30 - 400 AMP	
POLES	G
SINGLE	1
TWO	1
THREE	1

* Insulation Red Polyglass
 NOTE: 30, 60 & 100 Amp parts bright dipped.
 200 Amp and above silver plated.

Type A, Double Throw, Front Connected Knife Switches (600 and 800 Amp)



250 VDC / 480 VAC*									
600 & 800 AMP							NO OF		
POLES	A	B	C	D	E	F	G	MTG. HOLES	
SINGLE	.75	6.25	7.75	3.88	-	-	9.25	4	
TWO	.75	10	11.5	3.75	4	-	10.13	4	
THREE	.75	16	17.5	3.75	4	6	10.25	4	

* 600 VDC/AC, Insulation Red Polyglass
 NOTE: 600 & 800 Amp parts silver plated.

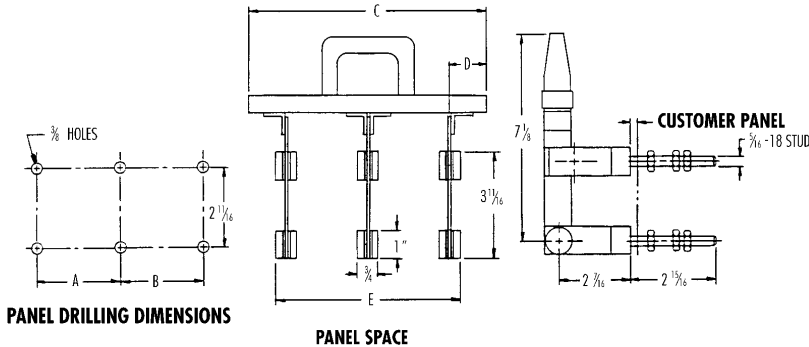
1200 Amp or Greater Contact Factory



KNIFE SWITCHES

TYPE DL SINGLE THROW

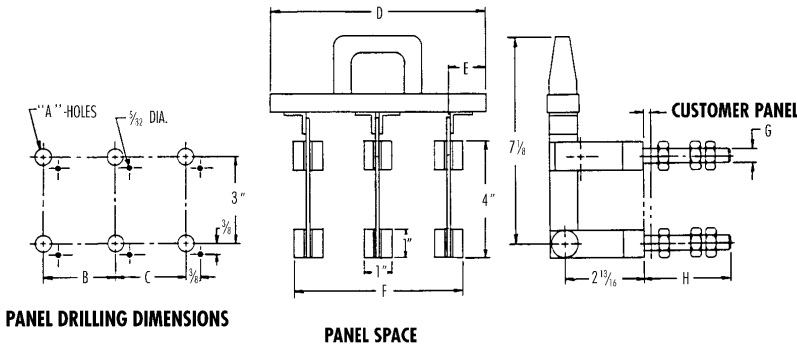
Type DL, Single Throw, Back Connected Knife Switches (30 and 60 Amp)



250 VDC / 480 VAC*					
30 and 60 AMP					
POLES	A	B	C	D	E
SINGLE	-	-	3.38	1.69	.75
TWO	2.88	-	5.25	1.19	3.63
THREE	2.88	2.88	5.25	-	6.5

* 600 VDC/AC, Insulation Red Polyglass
NOTE: 30/60 Amp parts bright dipped.

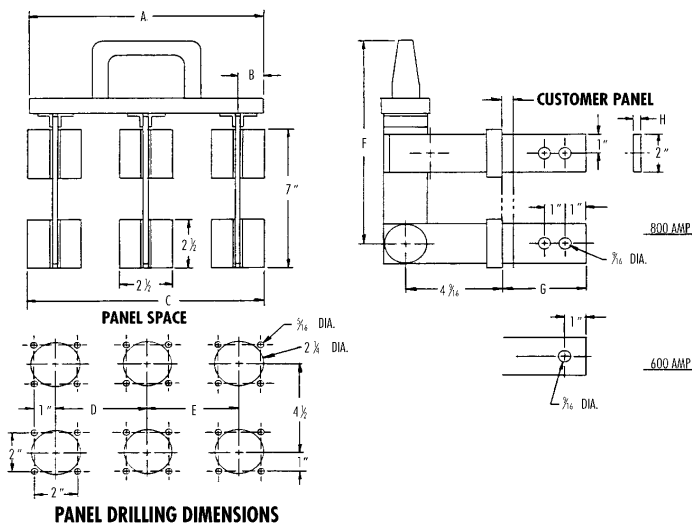
Type DL, Single Throw, Back Connected Knife Switches (100 - 400 Amp)



250 VDC / 480 VAC*														
100, 200, 300 & 400 AMP						100 & 200 AMP			300 AMP			400 AMP		
POLES	B	C	D	E	F	A	G	H	A	G	H	A	G	H
SINGLE	-	-	3.38	1.69	1	.5	44-14	3	.56	5-13	3	.69	.63-11	3.5
TWO	2.5	-	5.25	1.38	3.5	.5	44-14	3	.56	5-13	3	.69	.63-11	3.5
THREE	2.5	2.5	5.25	.13	6	.5	44-14	3	.56	5-13	3	.69	.63-11	3.5

* 600 VDC/AC, Insulation Red Polyglass
NOTE: 100 Amp parts bright dipped.
200 Amp and above silver plated.

Type DL, Single Throw, Back Connected Knife Switches (600 and 800 Amp)



250 VDC / 480 VAC*										
600 and 800 AMP						600 AMP		800 AMP		
POLES	A	B	C	D	E	F	G	H	G	H
SINGLE	3.38	1.69	2.5	-	-	9.25	3	2.5	4	.38
TWO	6.25	1	6.75	4.25	-	10.13	3	2.5	4	.38
THREE	9.25	.38	11	4.25	4.25	10.25	3	2.5	4	.38

* 600 VDC/AC, Insulation Red Polyglass
NOTE: 600 & 800 Amp parts silver plated.

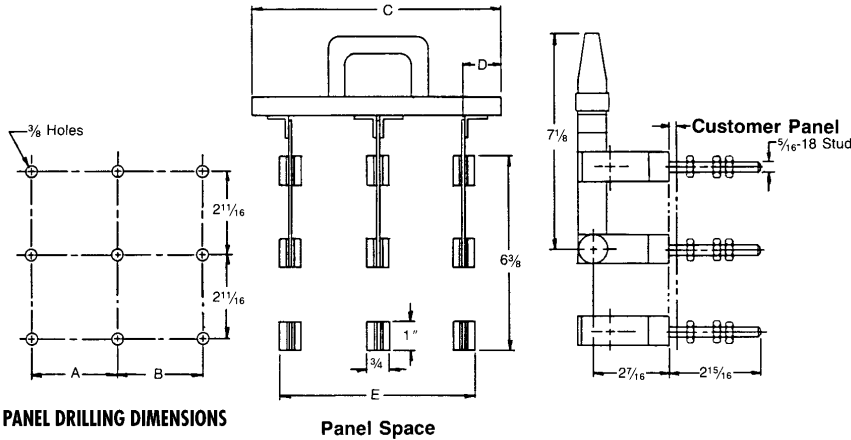
1200 Amp or Greater Contact Factory



KNIFE SWITCHES

TYPE DL DOUBLE THROW

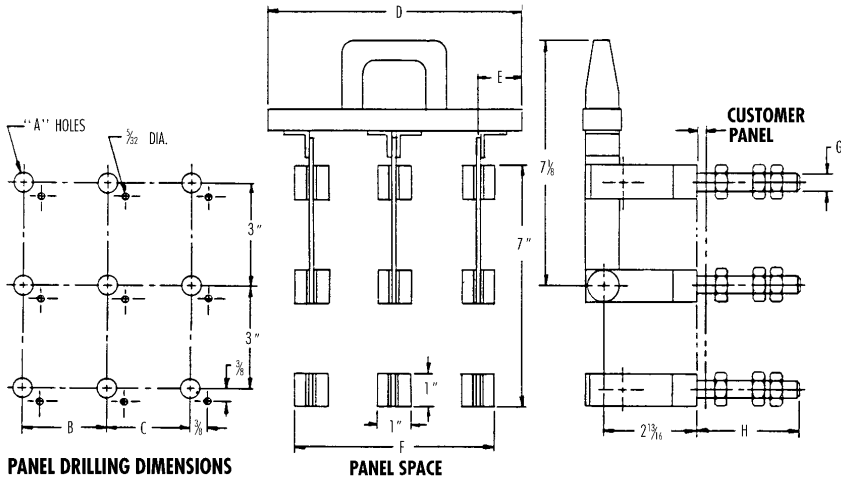
Type DL, Double Throw, Back Connected Knife Switches (30 and 60 Amp)



250 VDC / 480 VAC*					
30 and 60 AMP					
POLES	A	B	C	D	E
SINGLE	-	-	3.38	1.69	.75
TWO	2.88	-	5.25	1.19	3.63
THREE	2.88	2.88	5.25	-	6.5

* 600 VDC/AC, Insulation Red Polyglass
NOTE: 30/60 Amp parts bright dipped.

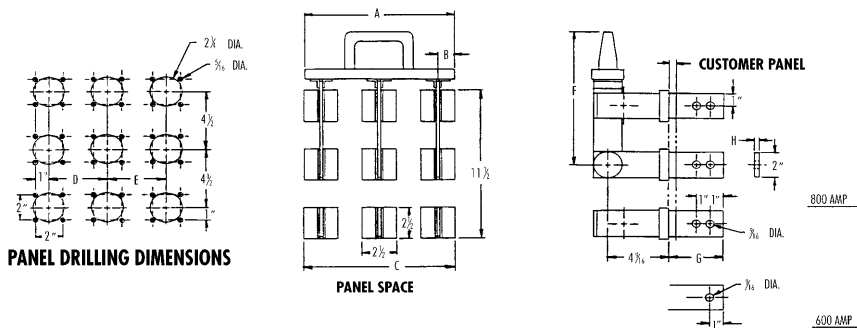
Type DL, Double Throw, Back Connected Knife Switches (100 Amp - 400 Amp)



250 VDC / 480 VAC*														
100, 200, 300 & 400 AMP						100 & 200 AMP			300 AMP			400 AMP		
POLES	B	C	D	E	F	A	G	H	A	G	H	A	G	H
SINGLE	-	-	3.38	1.69	1	.5	44-14	3	.56	5-18	3	.69	63-11	3.5
TWO	2.5	-	5.25	1.38	3.5	.5	44-14	3	.56	5-18	3	.69	63-11	3.5
THREE	2.5	2.5	5.25	.13	6	.5	44-14	3	.56	5-18	3	.69	63-11	3.5

* 600 VDC/AC, Insulation Red Polyglass
NOTE: 100 Amp parts bright dipped.
200 Amp and above silver plated.

Type DL, Double Throw, Back Connected Knife Switches (600 Amp and 800 Amp)



250 VDC / 480 VAC*											
600 and 800 AMP						600 AMP			800 AMP		
POLES	A	B	C	D	E	F	G	H	G	H	
SINGLE	3.38	1.69	2.5	-	-	9.25	3	.25	4	.38	
TWO	6.25	1	6.75	4.25	-	10.13	3	.25	4	.38	
THREE	9.25	.38	11	4.25	4.25	10.25	3	.25	4	.38	

* 600 VDC/AC, Insulation Red Polyglass
NOTE: 600 & 800 Amp parts silver plated.

1200 Amp or Greater Contact Factory



CONSTRUCTION DETAILS

DETENT-ACTION SWITCHES

Electroswitch Detent Switches

Electroswitch Detent Switches are a heavy-duty design that is very versatile and enables standard units to satisfy a great variety of complex switching applications. They are modular in that several subassemblies are stacked together to form a rigid rugged device. Figure 1 shows a cut-away view exposing the basic components.

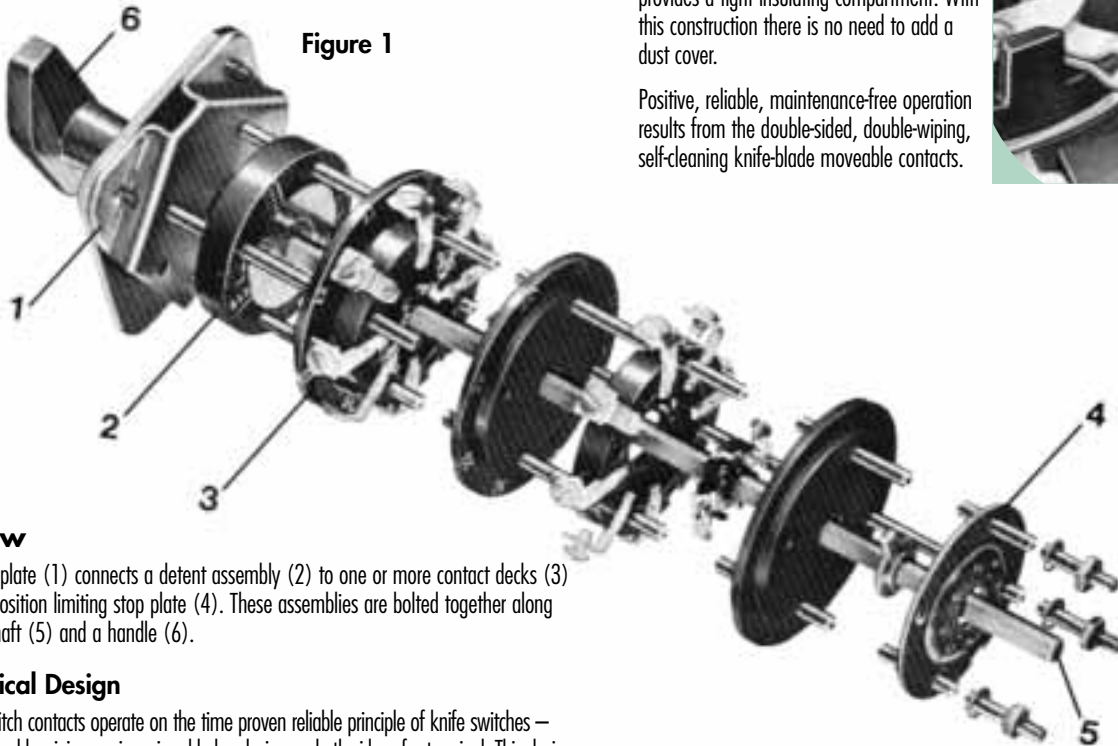


Figure 1

Overview

The mounting plate (1) connects a detent assembly (2) to one or more contact decks (3) and finally a position limiting stop plate (4). These assemblies are bolted together along with a steel shaft (5) and a handle (6).

The Electrical Design

The Detent Switch contacts operate on the time proven reliable principle of knife switches – double-sided, double-wiping, spring-wiper blades closing on both sides of a terminal. This design is shock-proof and virtually bounce-proof. Figure 2 shows a typical contacting arrangement.

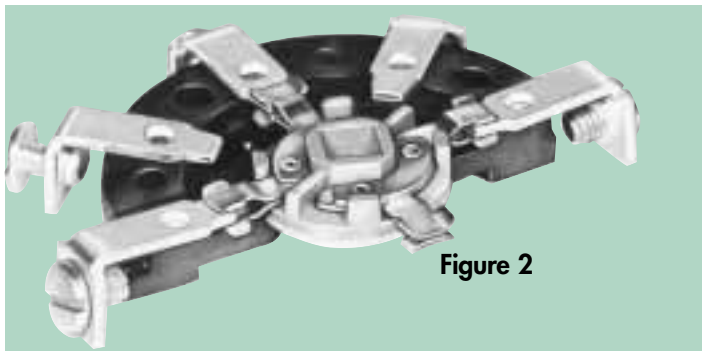


Figure 2

The Detent Assembly

The detent assembly contains a specially designed star wheel and up to four spring-loaded ball bearings providing snappy positive indexing. Spring return switches use a coil spring in place of the star wheel/spring/ball bearing arrangement.

The Pull-to-Lock Mechanism

Control switches generally have positions both 45° left and right of the normal vertical position. The handle spring-returns to the normal position. The pull-to-lock mechanism enables an operator to turn the handle beyond the left (normally TRIP) position to the 90° location, pull out the handle and thereby lock the switch into this position. This precludes the possibility of someone inadvertently closing a circuit-breaker when it is desired that it stay in the tripped position.

The Contact Deck Assembly

The electrical parts are contained within sturdy phenolic moldings that provide individual insulated compartments where all switching takes place.

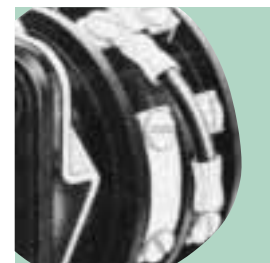
An insulating barrier completes the contact deck assembly. The barrier not only separates one contact assembly from another but also provides a tight insulating compartment. With this construction there is no need to add a dust cover.

Positive, reliable, maintenance-free operation results from the double-sided, double-wiping, self-cleaning knife-blade moveable contacts.



The barrier next to the stationary terminals is clearly marked with numerals for Series 24 and 31 that correspond with the wiring diagrams.

Terminal screws secure the external wiring to the terminals.



Jumpering may be done right on the switch providing a simple and neat arrangement. Silver plated brass strap jumpers are available for adjacent contacts – either between adjacent contacts on the same deck or the same terminal location on adjacent decks. Wire and lug jumpers are also available. Jumpers are already supplied assembled on the typical instrument switches, illustrated in this catalog, simplifying field wiring. All you need to do is connect the instrument leads and the line wires.

The Stop Plate

The steel stop plate assembly includes a steel stop arm that is connected to the shaft and a steel stop plate that contains tapped holes. Stop screws are inserted in the field to limit the positions to the number and location desired. This externally adjustable position limiting feature allows the use of standard switches for many customized applications. The limit screws are supplied assembled for typical instrument switches.

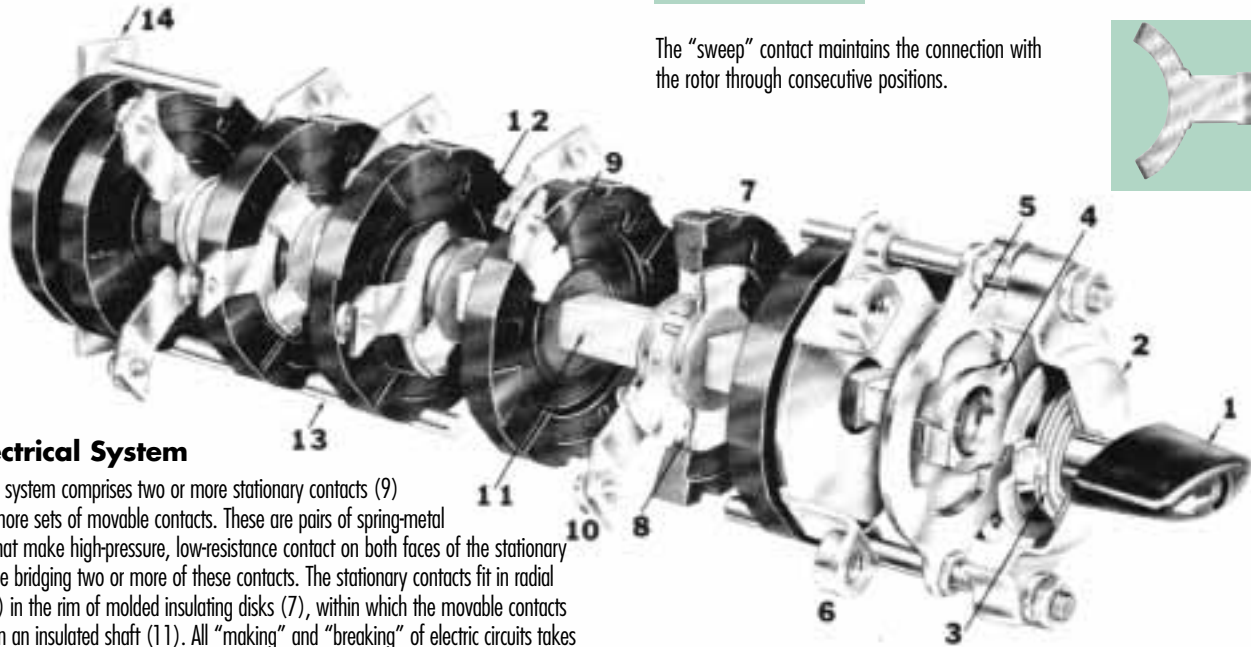


CONSTRUCTION DETAILS

SNAP-ACTION SWITCHES

Snap-Action Switches

Snap-Action Switches use a design that enables them to combine a small number of basic parts to satisfy a wide variety of requirements for selector and control switching of power circuits. Standard switches built with this design for 15-, 40-, 60-, and 200-ampere capacities are listed in this catalog. However, the cataloged units merely indicate switching possibilities; we will gladly recommend other combinations, based on our experience, for specific requirements.



The Electrical System

The electrical system comprises two or more stationary contacts (9) and one or more sets of movable contacts. These are pairs of spring-metal blades (8) that make high-pressure, low-resistance contact on both faces of the stationary contacts while bridging two or more of these contacts. The stationary contacts fit in radial grooves (12) in the rim of molded insulating disks (7), within which the movable contacts are carried on an insulated shaft (11). All "making" and "breaking" of electric circuits takes place within the closed spaces between adjacent disks. Their quick-break action makes these switches particularly suitable for direct-current service. The ends of the stationary contacts extend outside the insulating disks and serve as connecting terminals (10). This one-piece contact/terminal construction minimizes series resistance and heating. Depending on current rating and on-wiring requirements, the terminals may have tapped holes for connecting screws or clearance holes for bolt connection of cable-lugs.

The Mechanical System

The mechanical system is designed to provide uniform high-speed "make" and "break", regardless of whether the operating handle (1) is turned rapidly or slowly. Turning the handle through approximately 120° in either direction winds a powerful coil spring (3). When this is fully wound, the indexing plate (4) is momentarily withdrawn from the locking plate (5) by an eccentric cam. The drive-shaft and movable contacts then snap rapidly to the next position. The indexing plate holds them until the spring-drive mechanism is again operated. Transit time is about ten milliseconds.

Assembly

The snap-drive mechanism, mechanism-cover (2), locking plate, mounting bracket (6), insulating disks, and back plate (14) are stacked on side securing rods (13) and bolted firmly together to form a rigid assembly. The handle is keyed to the operating shaft and secured by a screw.

Stationary Contacts

Non-shorting (break-before-make) contacts are standard in all the ratings and circuits shown in this catalog.



Shorting (make-before-break) contacts, required in some special circuits, are available on order.



The "sweep" contact maintains the connection with the rotor through consecutive positions.

Moveable Contacts (Rotors)

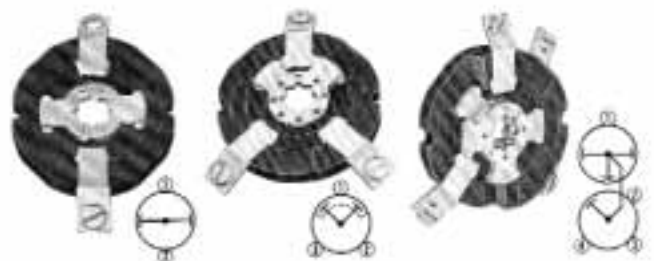
The simple, straight-across rotor bridges stationary contacts in the same insulating disk. It provides single-throw switching in Circuit 1 and double-throw switching in Circuit 6.

The right-angle-blade rotor provides a double-throw switching, with an intermediate OFF position, in Circuit 7.

A multi-fingered blade is combined with a single-contact blade to form a composite (double-deck) rotor that interconnects stationary contacts in adjacent disks. Suitable blade arrangements provide double-throw, triple-throw, or four-throw switching.

Insulating Disks (and Circuits)

The insulating disks, molded of phenolic per MIL-M-14, have three functions. They hold the stationary contacts, they form enclosures that contain all making and breaking contacts, and they provide both mechanical and electrical separation of switching sections.





CONSTRUCTION DETAILS

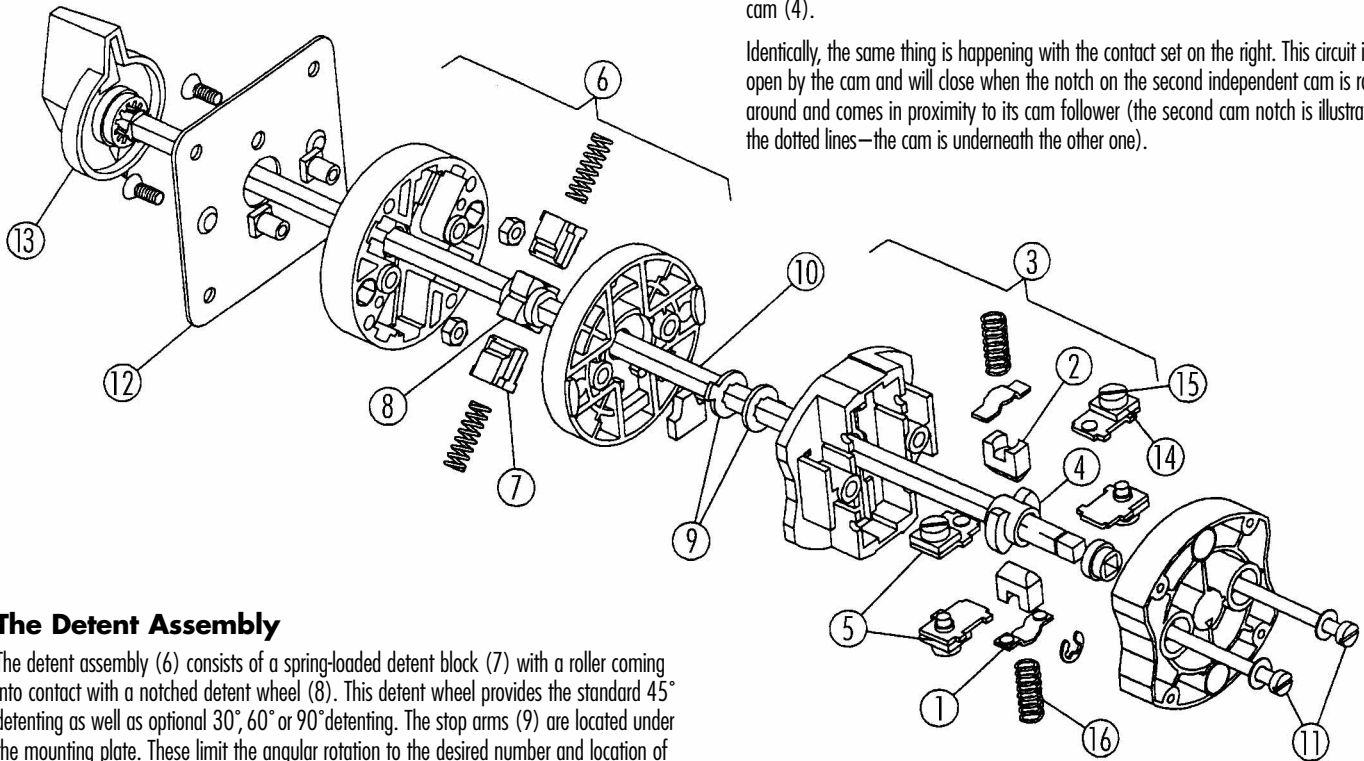
CAM-ACTION SWITCHES

Cam-Action Switches

The design principle allows the combination of a relatively small number of basic parts to satisfy a wide variety of requirements for selector and control switching in power circuits.

The Mechanical Design

The switch features a modular design with switching decks (3) stacked with a detent mechanism deck (6), a mounting plate (12), and a handle (13). A steel shaft (10) couples the handle to the operating parts. Two steel securing rods (11) are used to bolt the whole mechanism rigidly together. The basic parts and assemblies are shown below.



The Detent Assembly

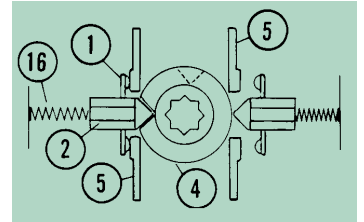
The detent assembly (6) consists of a spring-loaded detent block (7) with a roller coming into contact with a notched detent wheel (8). This detent wheel provides the standard 45° detenting as well as optional 30°, 60° or 90° detenting. The stop arms (9) are located under the mounting plate. These limit the angular rotation to the desired number and location of positions.

The Contact Assembly

The contact assembly (3) consists of a rigid thermosetting plastic housing, two sets of stationary contacts (5), and two spring-loaded (16) movable contacts (1) held in cam followers (2). Floating on the shaft and held within the contacting chamber are two independent cams (4). The cams are notched to provide the contact "close" angles desired. The contacts are spring-loaded closed and mechanically opened by the cam action to avoid sticking. The terminal screw (15) and pressure clamp (14) will easily accommodate stranded wire with lugs or solid wire, either with or without lugs, compatible with switch size.

Contact Operation

The contacting consists simply of shunting two isolated contacts to make a circuit. Two independent sets of contacts are placed in each deck. The moving portion is spring-loaded to close the contact. A notch on the cam is affixed to the operating shaft allowing the moving contact to spring close, bridging the stationary contacts.



The movable contact (1) is spring-loaded (16) and held by the cam follower (2). It makes a circuit with the two stationary contacts (5) when the cam follower enters the notch in the cam (4).

Identically, the same thing is happening with the contact set on the right. This circuit is held open by the cam and will close when the notch on the second independent cam is rotated around and comes in proximity to its cam follower (the second cam notch is illustrated by the dotted lines—the cam is underneath the other one).





We show the contacts pictorially to agree with typical detailed schematics and wiring plans. This simple system makes the switch contact arrangement, performance and location independent of the switching action required. The switching action is varied and controlled by the shape of the cams—allowing a virtually infinite number of combinations using a few standard parts. This simplicity and flexibility makes it easy for you to design your own switch—using familiar contact language. You eliminate the worry, long deliveries, high costs, etc. normally associated with special switches.




Note: The terminal numbering consists of individual numbers for each terminal for positive identification.







ELECTROSWITCH ACCESSORIES

HANDLES

SNAP-ACTION SERIES 101				
TYPE	FLUSH (A)	OVAL (B)	KNURLED (C)	PISTOL-GRIP (D)
Part No.	01040-2	01040-6-1	01040-5-1	01040-4-1
Screw No.	02016-9	02016-18	02016-18	02016-18
Lockwasher No.	02015-6	02015-1	02015-1	02015-1
Notes	Uses lever screw 02016-33 Not interchangeable	Interchangeable		

SNAP-ACTION SERIES 103			
TYPE	FLUSH (A)	KNURLED (C)	PISTOL-GRIP (D)
Part No.	03524-2	02000-10-5	02000-12-6
Screw No.	02016-27		02016-4
Lockwasher No.	02015-14		02015-4
Notes	Uses lever screw 02016-34 Not interchangeable	Interchangeable	

SNAP-ACTION SERIES 105		
TYPE	FLUSH (A)	PISTOL-GRIP (D)
Part No.	06000-1	02000-12-6
Screw No.	02016-28	02016-4
Lockwasher No.	02015-4	02015-4
Notes	Not interchangeable	Special shaft required Not interchangeable

SNAP-ACTION SERIES 107		
TYPE	FLUSH (A)	DOUBLE BALL
Part No.	07000-1	007013-1-1
Screw No.	02016-29	—
Lockwasher No.	02015-15	—
Notes	Not interchangeable	Special shaft required Not interchangeable

TAP SWITCHES		
TYPE	PISTOL-GRIP	T-HANDLE
Series	S1, T2, T3	S1, T2, T3
Part No.	1050084	1050079



ELECTROSWITCH ACCESSORIES HANDLES





DETENT-ACTION SERIES 21, 25, 28				
TYPE	FLUSH (A)	OVAL WITH ARROW (B)	OVAL WITHOUT ARROW (B)	PISTOL-GRIP (D)
Part No.	02000-1	02000-4-1	02000-3-1	02000-12-3
Screw No.	02016-4	02016-3	02016-3	02016-192
Lockwasher No.	02015-4	02015-4	02015-4	02015-4
Notes	Standard	Optional Interchangeable Handles		
DETENT-ACTION SERIES 24				
TYPE	OVAL (B)	KNURLED (C)	PISTOL-GRIP (D)	
Part No.	02000-11	02000-10	02000-12	
Screw No.	02016-4	02016-4	02016-4	
Lockwasher No.	02015-4	02015-4	02015-4	
Notes	Standard	Optional Interchangeable Handles		
DETENT-ACTION SERIES 31				
TYPE	FLUSH (A)	OVAL (B)	KNURLED (C)	PISTOL GRIP (D)
Mount	Single Hole Mount	4-Hole Mount	4-Hole Mount	4-Hole Mount
Part No.	03029-1	03029-6-1	03029-4-1	03029-5-1
Screw No.	Included	02016-101	02016-101	02016-101
Lockwasher No.	-	02015-34	02015-34	02015-34
Notes	Standard - on single hole mount	Standard - on 4-hole mount Optional on single hole mount	Optional Interchangeable Handles	





CAM-ACTION				
TYPE	FLUSH POINTER	BALL TIP	T-HANDLE	
Series	KW 12, 20	KW 16, 25, 32, 40	KW 400-800	
Part No.	H1021	H11203		
Screw	Included	Included		
Series	KW 16, 25, 32, 40	KW 200-800		
Part No.	H11303	H31203		
Screw	Included	Included		
Series	KW 63-100			
Part No.	H21023			
Screw	Included			
Series	KW 200-800			
Part No.	H31303			
Screw	Included			











ELECTROSWITCH ACCESSORIES


NAMEPLATES


DETENT-ACTION				
Series	21, 25, 28	31 Single Hole Mount	31 Four Hole Mount	24
Code No.	08	30	31	10
Size	4" x 4"	2" Diameter	2.38" x 2.88"	2.91" x 2.81"
Title Engraving*	15	10	12	14
Position Engraving*	8	6	6	5
Notes	For waterproof mount use Code No. 09			For waterproof mount use Code No. 11 For target nameplate, consult factory

SNAP-ACTION				
Series	101	103	105	107
Code No.	04	35	38	41
Size	2.38" x 2.88"	3.13" x 3.13"	5" x 5"	6.75" x 6.75"
Title Engraving*	12	12	12	12
Position Engraving*	6	6	6	6
Notes	For waterproof mount use Code No. 05	For waterproof mount use Code No. 36	For waterproof mount use Code No. 39	

CAM-ACTION				
Series	KW 12-20	KW 12-20	KW 16, 25, 32, 40	KW 16, 25, 32, 40
Code No.	64	68	65	69
Size	1.9" sq.	1.9" x 2.56"	2.56" sq.	2.56" x 3.35"
Title Engraving*	—	15	—	13
Position Engraving*	5	5	5	5
Notes	No title	With title	No title	With title

CAM-ACTION				
Series	KW 63-100	KW 63-100	KW 200-800	KW 200-800
Code No.	66	70	67	71
Size	3.70" sq.	3.70" x 4.61"	5.20" sq.	5.20" x 6.18"
Title Engraving*	—	15	—	17
Position Engraving*	6	6	6	6
Notes	No title	With title	No title	With title

CAM-ACTION	
Series	KW 12, 16, 20, 25, 32, 40
Code No.	78
Size	2.48" sq.
Title Engraving*	15
Position Engraving*	5

TAP SWITCHES	
Series	S1, T2, T3
Code No.	26
Size	5.38" sq.
Title Engraving	—
Position Engraving	1 Character per position

*For Detent, Snap & Cam switches, numbers of characters shown for engraving is recommended maximum.



Terminal and Mounting Hardware - Detent- and Snap-Action

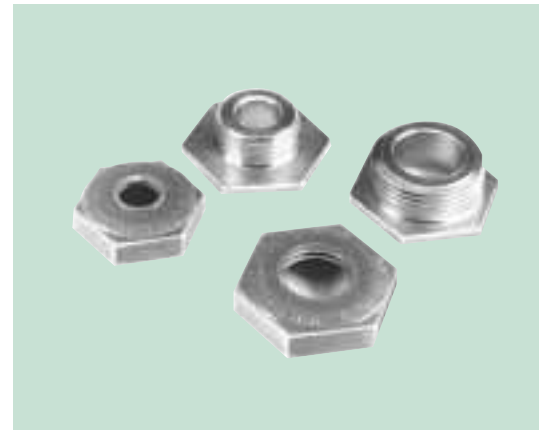
Series	21	24	25	28	31 FOUR HOLE	31 SINGLE HOLE	101	103
Terminal Screw	02016-1-C3	02016-26-C3	02016-1-C3	02016-1-C3	02016-1-C3	02016-1-C3	02016-26	02016-58
Lock Washer	02015-1-C3	-	02015-1-C3	02015-1-C3	-	02015-1-C3	-	-
Stop Screw	02016-10	02016-10	02016-10	02016-8	02016-10	02016-10	-	-
Lockwasher	02015-6	02015-6	02015-6	02015-2	02015-6	02015-6	-	-
Mounting Screw	02016-81	02016-87	02016-81	02016-81	02016-102	*	02016-103	02016-64

* Nut 02017-4 (2) Locking ring 03007-1 (1) Lockwasher 02015-5

Waterproof Mount

Series 101		Series 103		Series 31A Single Hole Mount	
Panel Thickness	Kit Number	Panel Thickness	Kit Number	Panel Thickness	Kit Number
0.0625"	001022-1	0.0625"	003521-1	0.188" Max	02017-8
0.125"	001022-2	0.125"	003521-2		
0.188"	001022-3	0.188"	003521-3		

For Series 101 and 103 Waterproof Mount Requires Special Shaft - Consult Factory

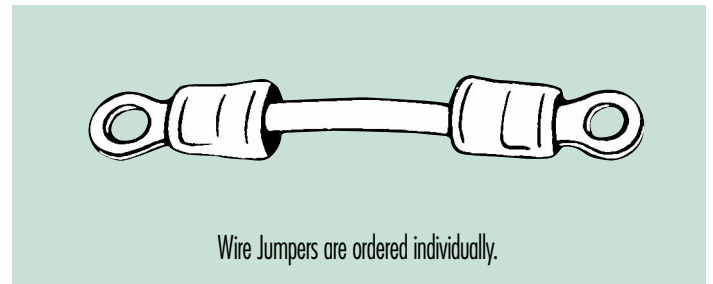
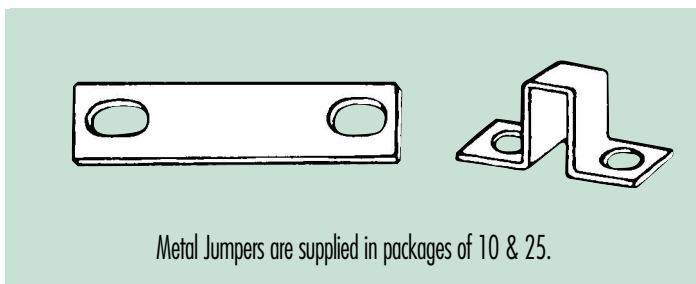


Jumpers - Detent and Snap-Action Switches

	Series 21	Series 24	Series 25	Series 28	Series 31 Single Hole	Series 31 Four Hole	Series 101	Series 103
Adjacent Contact Same Deck	02011-2-C3	02011-10-C3	02011-1-C3	02011-3-C3	03057-1-C3	03057-1-C3	-	-
Same Contact Adjacent Deck	02011-4-C3	02011-12-C3	02011-4-C3	02011-4-C3	03059-1-C3	03059-1-C3	-	-
2" Wire and Lugs	00314-1	02012-1	00314-1	00314-1	00314-1	00314-1	002012-5	-
3" Wire and Lugs	00314-2	02012-2	00314-2	00314-2	00314-2	00314-2	002012-6	002012-13
5" Wire and Lugs	00314-3	02012-3	00314-3	00314-3	00314-3	00314-3	002012-7	002012-12

Jumpers - Cam-Action Switches

	KW12-20	KW16-25	KW32-40	KW63	KW100	KW200
Adjacent Contact Same Deck	C-5109	F-14901	F-14916	F-24911	F-24915	F-35302
Same Contact Adjacent Deck	C-5110	F-14902	F-14917	F-24912	F-24916	F-35311





All About Testing

Switches are tested in many ways to prove their capabilities and reliability. Electroswitch uses a combination of test methods to provide meaningful data for all applications. These include:

1. Cycle it mechanically until it breaks. This is usually an academic test since switches that do not switch electric power are not needed. An exception is a setup switch whereby the switch sets up a complicated circuit and then a circuit breaker switches the power. All testing is done under electrical load.
2. Test under an application oriented specification—something that simulates actual operating conditions such as environment, overloads, surges, etc. UL1054 on SPECIAL USE SWITCHES and CSA C22.2 on INDUSTRIAL CONTROL EQUIPMENT for use in Ordinary (non-hazardous) Locations are probably the best specifications in widespread use. The Series 21, 24, 25, 28 and 31 are UL recognized and CSA certified to these specifications.
3. Test at different ratings until destruction to determine ultimate life (destruction could be mechanical failure, shorting out, dielectric failure, excessive heat rise, etc.). The test conditions are outlined on the SELECTOR CHART for each type of switch. The results are summarized below:

Both UL and CSA testing consists of two parts:

1. Product testing to the specifications.
2. Follow-up service by UL and CSA personnel at the factory, including inspection and testing to insure that the quality and reliability is maintained.

If all conditions are met, the switches are considered “certified electrical equipment” by CSA and “recognized components” by UL and the applications are subject to review by these agencies to assure suitability.

CSA	THROUGH AIR	OVER SURFACES
51-150V	.12"	.25"
151-300V	.25"	.37"
301-600V	.37"	.50"



UL and CSA Ratings

Series	UL Recognized	CSA Certified
21	15A - 120VAC 7.5 - 240VAC 4A - 600VAC	10A - 125VAC
24	20A - 120VAC 15A - 240VAC 6A - 600VAC 3A - 125VDC 1A - 250VDC	20A - 600VAC 10A - 30VDC 2A - 125VDC 2 HP - 240/480VAC
25	10A - 120VAC 5A - 240VAC 3A - 600VAC	7.5A - 125VAC
28	5A - 120VAC 3A - 240VAC 2A - 600VAC	5A - 125VAC
31	10A - 125VAC 5A - 250VAC 3A - 600VAC 5A - 30VDC 1A - 125VDC	10A - 125VAC 5A - 250VAC
101	15A-120VAC 10A-240VAC 7.5A-600VAC 10A-125VDC 5A-250VDC 1/2HP-120/240VAC CKT 1,2,3	15A-120VAC 10A-240VAC 5A-480VAC 3A-600VAC 10A-125VDC 5A-250VDC 5HP-120,240VAC
103	30A - 480VAC 30A - 250VDC 2HP - 240/480VAC	30A - 600VAC 30A - 250VDC 2HP - 240/480VAC

These recognized or certified ratings are not necessarily the limits of switch capacity. They represent the acceptable tested ratings to comply with individual standards.

Tests include:

1. Overload — 50 cycles of operation.
UL — 0-10A at 150% rating ... over 10A at 125% rating
CSA — 150% rating
2. Endurance—6000 operations (DC resistive; AC at .75 to .80 pf)
3. Temperature rise of contacts 30° max. at maximum continuous current rating
4. Dielectric Voltage Withstand UL-220VRMS
5. Spacings (between live parts or live parts to ground)
UL—0-250V (1/8 in. min.) 251-600V (1/4 in. min.)



Test Results (AC Ratings are 60 Hz)

Switch Type	Test Specifications	AC Motor Horsepower Ratings				General Ratings		
		220/240 10	220/240 30	440/480 300	550/600 30	240 VAC	600 VAC	24 VDC
KW12	UL 508 CSA C22.2	1 HP	2 HP			12A		12A
KW16	UL 508 CSA C22.2	2.5 HP	5 HP	10 HP	10 HP		16A	16A
KW20	UL 508 CSA C22.2	2.5 HP	5 HP			20A		20A
KW25	UL 508 CSA C22.2	3 HP	7.5 HP	15 HP	15 HP		25A	25A
KW32	UL 508 CSA C22.2	5 HP	10 HP	20 HP	20 HP		32A	32A
KW40	UL 508 CSA C22.2	7.5 HP	15 HP	25 HP	25 HP		40A	40A
KW63	UL 508 CSA C22.2	10 HP	20 HP	40 HP	40 HP		63A	63A
KW100	UL 508 CSA C22.2	15 HP	30 HP	50 HP	50 HP		100A	100A
KW200	UL 508 CSA C22.2	30 HP	60 HP	75 HP	60 HP		200A	200A

Please contact factory for test data on the KW400, KW600 and KW800.

Life Expectancy - Detent-Action

Series Switch	Amps	Alternating Current - 60 Hz						Direct Current			
		125VAC		250VAC		600VAC		24VDC		125VDC	
		Resistive	Inductive	Resistive	Inductive	Resistive	Inductive	Resistive	Inductive	Resistive	Inductive
21	10	40,000	40,000	—	—	—	—	40,000	—	—	—
	5	—	—	40,000	40,000	—	—	—	—	—	—
	2	—	—	—	—	—	—	—	—	40,000	—
24	20	10,000	10,000	10,000	10,000	10,000	10,000	—	—	—	—
	3	—	—	—	—	—	—	—	—	10,000	10,000
25	7.5	40,000	40,000	—	—	—	—	40,000	—	—	—
	3	—	—	40,000	40,000	—	—	—	—	—	—
28	5	40,000	40,000	—	—	—	—	40,000	—	—	—
	2	—	—	40,000	40,000	—	—	—	—	—	—
31	10	22,000	18,000	—	—	—	—	7,000	—	—	—
	5	42,000	38,000	22,000	18,000	—	—	38,000	10,000	—	—
	3	52,000	48,000	32,000	28,000	—	—	48,000	20,000	—	—
	1	70,000	65,000	50,000	45,000	30,000	25,000	65,000	37,000	40,000	15,000
	0.5	75,000	70,000	55,000	50,000	35,000	30,000	70,000	42,000	50,000	30,000

Hot Filament Load - Series 31 for 40,000 operations at 3A - 125VAC Inductive Loads - AC (60-400Hz) - Power factor: To 0.75 DC - 24VDC at .15 Henry, 125VDC at .075 Henry

Life Expectancy - Snap-Action

Series Switch	Amps	Alternating Current - 60Hz				Direct Current					
		Inductive ¹ , resistive, or lamp load				24 Volts		125 Volts		250 Volts	
		Throws	125 Volts	250 Volts	600 Volts	Resistive ²	Inductive ²	Resistive ²	Inductive ²	Resistive ²	Inductive ²
101 20 amperes 600 volts continuous	3	1	55,000	45,000	35,000	55,000	40,000	45,000	30,000	25,000	20,000
		2-3-4	50,000	40,000	30,000	50,000	35,000	40,000	25,000	20,000	15,000
	5	1	45,000	35,000	25,000	45,000	30,000	35,000	20,000	20,000	15,000
		2-3-4	40,000	30,000	20,000	40,000	25,000	30,000	15,000	15,000	10,000
10	1	35,000	25,000	15,000	35,000	15,000	20,000	10,000	—	—	
	2-3-4	30,000	15,000	—	30,000	10,000	15,000	5,000	—	—	
15	1	20,000	10,000	—	20,000	—	—	—	—	—	
	2-3-4	10,000	—	—	10,000	—	—	—	—	—	
103 45 amperes 600 volts continuous	15	1	35,000	35,000	35,000	35,000	35,000	35,000	35,000	30,000	—
		2-3-4	35,000	35,000	35,000	35,000	35,000	35,000	35,000	25,000	—
	30	1	35,000	33,000	30,000	35,000	—	30,000	—	—	—
		2-3-4	30,000	25,000	20,000	30,000	—	25,000	—	—	—
40	1	30,000	28,000	25,000	30,000	—	25,000	—	—	—	
	2-3-4	25,000	20,000	15,000	25,000	—	20,000	—	—	—	
105	60	1	7,500	7,000	6,500	7,500	—	5,000	—	4,000	—
		2-3-4	7,000	6,500	6,000	7,000	—	4,000	—	3,000	—
	75	1	4,000	3,500	3,000	4,000	—	—	—	—	—
		2-3-4	3,500	3,000	—	2,000	—	—	—	—	—
107	200	1	7,500	7,000	6,500	7,000	—	—	—	—	—
		2-3-4	7,000	6,500	6,000	6,500	—	—	—	—	—

¹ 0.8 pf

² and lamp load

³ 0.08 henry



WHATEVER YOUR SWITCHING NEEDS, LET ELECTROSWITCH PRECISELY MEET YOUR APPLICATION REQUIREMENTS



Miniature
Instrument & Control Switches



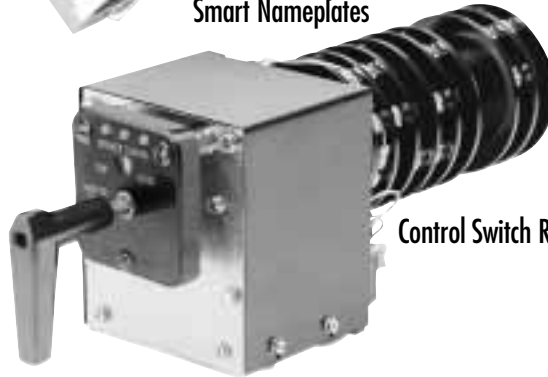
Lock-Out Relays with
Smart Nameplates



Selector Switch Relays



Key Lock Switches



Control Switch Relays



Modular Lighted
Instrument & Control Switches



Tagging Relays



Latching Switch Relays



Electric Reset
Lock-Out Relays



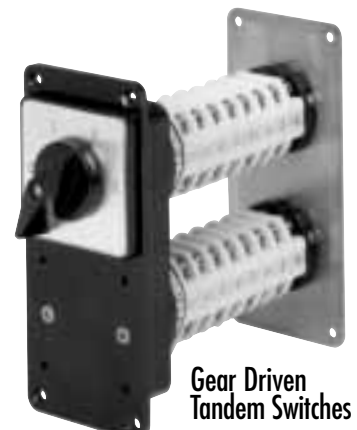
Special Handle Configurations



CIM
(Control Indicator Module)



PRIM (Protective Relay Indicator Module)

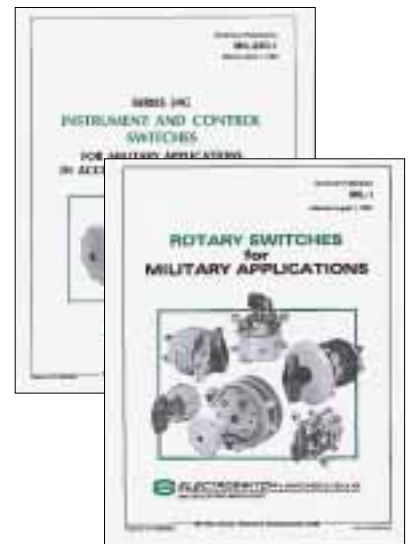
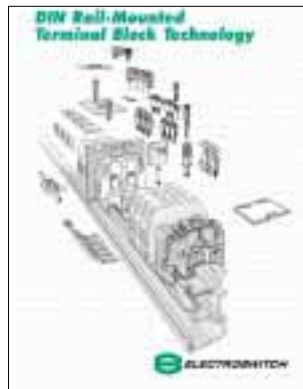
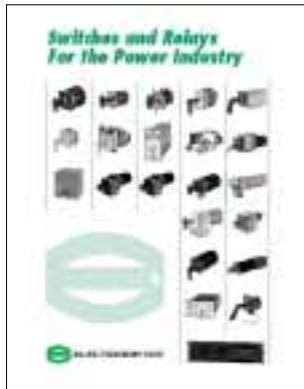


Gear Driven
Tandem Switches

ELECTRO SWITCH CORP.

In addition to Switches for Industrial Applications, Electro Switch also provides Switches and Relays for the Power Industry as well as Switches for Military and Electronic

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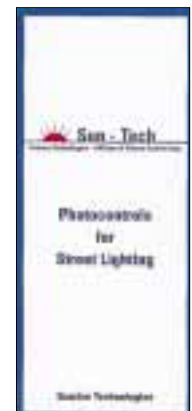
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