

Technical Publication

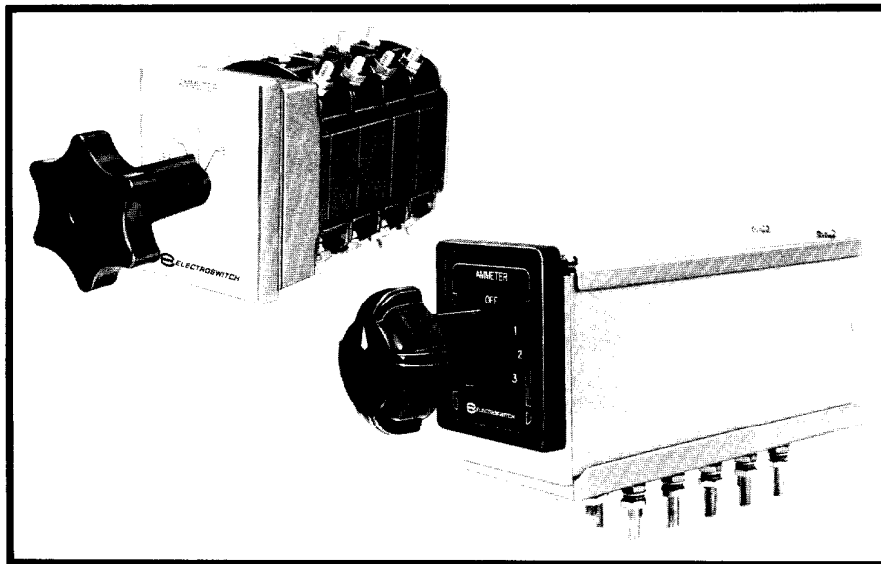
W-1

Effective September 1, 1998

**TYPE W AND W-2
INSTRUMENT & CONTROL SWITCHES**

**TYPE WL AND WL-2
MULTI-CONTACT LOCK-OUT RELAYS**

**FOR POWER INDUSTRY AND
HEAVY DUTY INDUSTRIAL APPLICATIONS**



ELECTROSWITCH
• SWITCHES & RELAYS
UNIT OF ELECTRO SWITCH CORP.

180 King Avenue, Weymouth, Massachusetts 02188

TELEPHONE: (781) 335-5200

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An Introduction...

Electroswitch is an acknowledged leader in the electrical industry. Over 40 years of experience goes into the design and manufacturing of our quality rotary power switches. The application of these switches for control of complex power systems through centralized switchboards and panels has been our specialty in the military, industrial and utility fields.

In addition to being the first choice of major electrical utilities, Electroswitch rotary power switches and relays are specified by manufacturers of high quality, heavy-duty control systems. These range from hi-shock Naval ship-board and nuclear reactor control to rugged industrial equipment such as locomotives, tractors, and other high vibration and hi-shock applications. Their durability and reliability have proved to be the most economical for our customers' most taxing applications. The dependability of our switches is the result of sound design, careful manufacturing, and rigid quality control. When a product line is as specialized and as critical in application as ours, we have to do the job right the first time...and every time...to maintain our customers' demands for the highest quality and reliability.

The ability to custom design rotary power switches to precisely fit every application has taken Electroswitch into many unique applications. The opportunity to choose among several distinct families of rotary power switches assures our customers that the correct switch is used for their most critical needs.

Economy is inherent in the design of our rotary power switches. The modular construction permits literally millions of different rugged and reliable switches to be built from an inventory of a few basic parts. Our use of the latest manufacturing techniques and methods also assures a reliable product ... at lower cost. Equally as important to our customers, Electroswitch traditionally exceeds industry standards for on-time, prompt deliveries.

Our test laboratory includes the equipment necessary from most endurance and environmental testing and quality assurance. Testing is performed to meet the requirements of UL 1054, UL 508, CSA 22/2, ANSI/IEEE 323-1984, MIL-S6807, MIL-S-21604, MIL-S-15291, MIL-S-18396, MIL-S-24187 and many other customer, industry and military specifications.

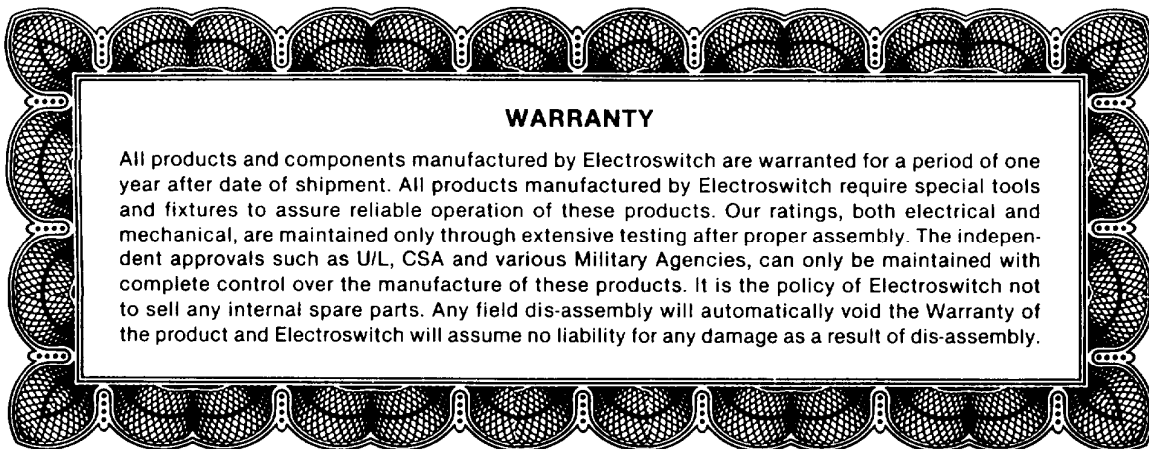


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TYPE W-2

TYPE WL-2

TYPE W

TYPE WL



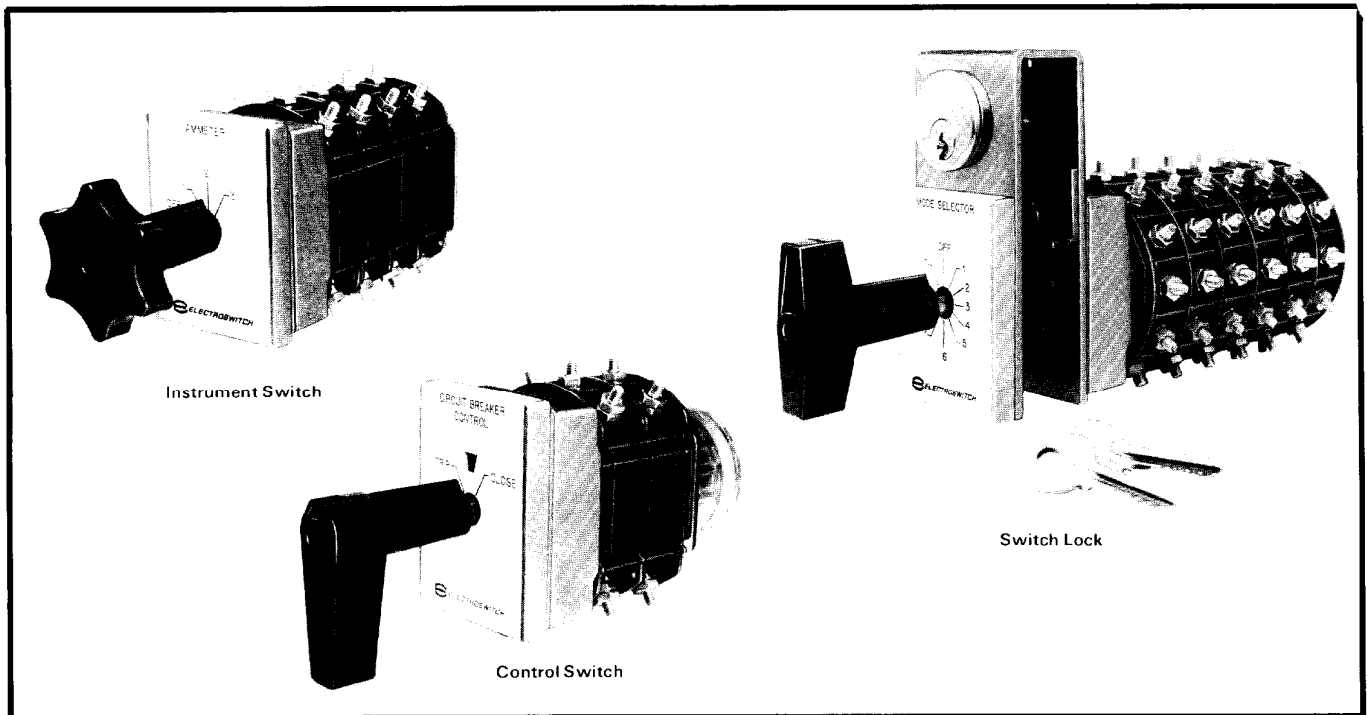
ELECTROSWITCH • SWITCHES & RELAYS

UNIT OF ELECTRO SWITCH CORP. • 180 KING AVENUE • WEYMOUTH, MASSACHUSETTS 02188 • TELEPHONE: (781) 335-5200 FAX: (781) 335-4253

Type W-2

Instrument and Control Switches

600 Volts, 20 Ampere
Continuous Capacity
UL Recognized



Abstract

The Type W-2 switch is designed for use as an instrument, control or general purpose switch. It is compact, yet of sufficient size to provide long, trouble-free service when applied within the specified ratings.

Instrument Switches: Maintained contact type used with all classes of electrical instruments, relays, meters, and for performing various circuit combinations. Designed for panel mounting and equipped with handles for manual operation.

Control Switches: Designed to spring return to the original or neutral position. They are used for circuit breaker control and other types of electrically controlled apparatus where momentary contact is required. They are designed for panel mounting and equipped with a handle for manual operation.

Advantages

- Small Size
- More Contacts per Unit Volume
- Roller-Wipe Spring Actuated Contacting
- Momentary & Maintained Contact Designs, or in Combination
- Affords almost limitless switching combinations
- Double Break Contacts per Stage
- UL recognized

Design Features

General Construction

The W-2 switch consists essentially of an operating handle, face plate, control housing, contact frame assembly and rotor assembly. It can be built up in any number of stages from 1 to 8, which stages are clamped together and to the control housing by two tie bolts. A steel operating shaft ties the contact rotors together. A metal cover on the rear holds the position stop pins and retains the shaft. For push or pull switches, the metal cover is replaced by a polycarbonate cover which houses the pull-out mechanism.

Switch Positions

The Type W-2 switch has a minimum of two and a maximum of twelve rotary positions with a 30° throw between positions, irrespective of the number. Each rotary position coincides precisely with the nameplate markings. The degree of throw between positions is fixed and cannot be changed. In addition to rotary motion, the W-2 switch can be provided with a lateral movement (push-pull) of the handle and shaft.

Contact Frames

Two contact frame sizes are available. The half frame has six sets of contacts; three sets on the top at 11, 12 and 1 o'clock positions and three sets on the bottom at 5, 6 and 7 o'clock positions. The full frame has 12 sets of contacts, each set located at 30° intervals around its perimeter as are the numbers on a clock. The contact frames are made of glass polyester insulating material.

Contacts

Switches are usually referred to as "so many stages long". For a W-2 switch, a stage of contacts consists of a contact frame (either 6 or 12 contact sets) and a rotor.

At every position location on the frame, there are two contact terminal studs in line (a set) per stage. Each of these studs is one piece, made of bronze alloy and silver plated.

Rotors

The rotors are standard in design and hold the roller contacts. Each rotor, made of glass polyester insulating material, rotates independently between the stage spacer plates. The rotor assembly is equipped with one to six rollers (as determined by the required circuitry) each of which makes contact with two adjacent stationary terminal studs to complete a circuit and so affording a double, series break contact. The silver-plated bronze alloy roller contacts provide a rolling, wiping action, are self-aligning on assembly and require no adjustment of contact pressure for the life of the switch. Contact springs do not carry current.



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Switch Dial

The Type W-2 switch dial consists of two parts: i.e. a dial plate and a nameplate.

The standard control switch dial plate is die cast aluminum, with red and green target parts where required, and serves as the base for mounting the nameplate. The nameplate is made of a white Cycloc ABS material on which is engraved in black the desired position markings. Refer to page 7.

Operation

The Type W-2 switch is a rotary roller action switch. Rotation of the shaft causes the rotor rollers to roll from one set of stationary contacts to another. The number of roller contacts can vary from 1 to 6 depending on the number of rotary positions required for the switch application. Each roller contact, moving radially, is held in and guided by a slot in the rotor arm. The rollers are pushed outward by spring pressure. Between roller and spring there is an insulated spring seat to reduce friction and wear. On standard potential contacts, an insulated wheel is used on both ends of the roller contact which rolls inside the switch stator frame. This arrangement reduces the friction of the spring-loaded roller in riding up on the stationary contact and also results in an increased air gap and faster contact separation.

The Type W-2 switch is available in both the maintained and the spring return types. Both types use a common housing that is 7/8" deep, located between the back surface of the dial plate and the frame-rotor unit.

Maintained Type: On a switch of this type, the switch is held in each rotary position by a starwheel mechanism. The mechanism consists of a pointed, notched, molded wheel rotating between two metal rollers mounted on spring loaded arms. This arrangement provides a positive snap action as the handle is turned.

Momentary Type: This type uses a rotor that is returned to its

original position by a double coil wound spring. The spring offers minimum opposition to movement of the switch handle, but is sufficiently strong to operate the rotor for all required contacting.

Optional Contact Features

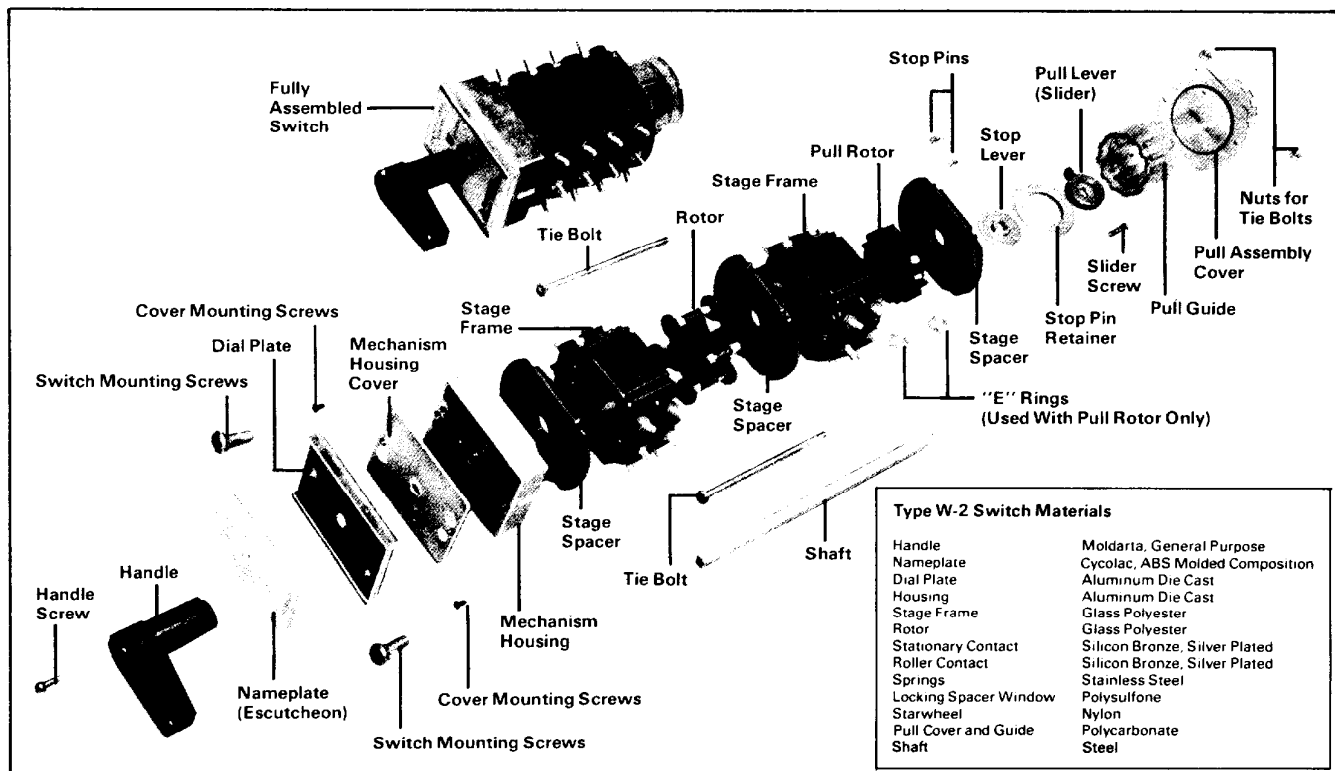
Shorting Contacts: Overlapping contacts are obtained by increasing the diameter of the contact rollers of the shorting bar. At mid-position the roller spans the space between the stationary contacts. Such rollers provide a make-before-break contact in going from one position to an adjacent position.

Normally Closed Contacts: For current circuits, there is available an assembly of normally closed contacts between front and rear terminals at each position on a stage. The assembly consists of a shorting bar across the two terminals and held closed by spring pressure. Turning the switch handle causes a cam to push the shorting bar away from the two terminals. Operating simultaneously with this contact assembly, in a different stage, are regular rollers designed and arranged so that they make a parallel circuit just prior to opening of the normally closed contact. This arrangement permits overlapping transition in current metering of circuits.

Slip Contacts: On three-position switches, slip contacts are available. These contacts close when the switch operating handle is turned to the right or left and remain closed after the operating handle has returned to the center position. The contacts open when the operating handle is turned to the opposite position and remain open upon return of the handle to the center position.

Lateral Contacts: In addition to rotary motion, the W-2 switch can be provided with lateral movement (push-pull) Spring actuated roller contacts are mounted in a wafer housing fastened to the operating shaft by "E" rings. The wafer housing can only be moved by a push or pull movement. The roller contact spans two adjacent terminals on a band and it moves back and forth between two bands in a stage.

Construction Details



Contact Interpretation

The contacts of the Type W-2 Switch are identified by the combination of Bands and Rows.

Rows

Viewing the switch from the handle end (front), it is noted the terminals are arranged in rows from front to back. The rows are set 30 degrees apart as is the face of a clock. On the six contact frame, the top three rows are identified as 11, 12 and 1 o'clock. The three rows at the bottom of the stage are 5, 6 and 7 o'clock. On the twelve contact frame, the rows are set as per each number on the face of a clock.

Bands

As the switch is viewed from the side, bands of terminals are readily seen around the outer perimeter of the stage frame. Such bands are lettered. The band nearest the handle end is band "A", the second band is band "B",

etc. and "A" and "B" constitute stage one, bands "C" and "D" constitute stage two, etc.

The row numbers and band letters are then combined to form full terminal identification as shown below and in the contact tabulations shown in this bulletin.

Contacts

The stationary contact (terminal) is a solid one piece forging. The moving (roller) contact is a solid bar.

To complete a circuit the roller contact internally bridges the stationary terminals in adjacent bands in the same row, for example, bands A & B in row twelve (A12-B12) etc.

Each Type W-2 switch is shipped with hardware packet containing one nut for each switch terminal to facilitate field wiring.

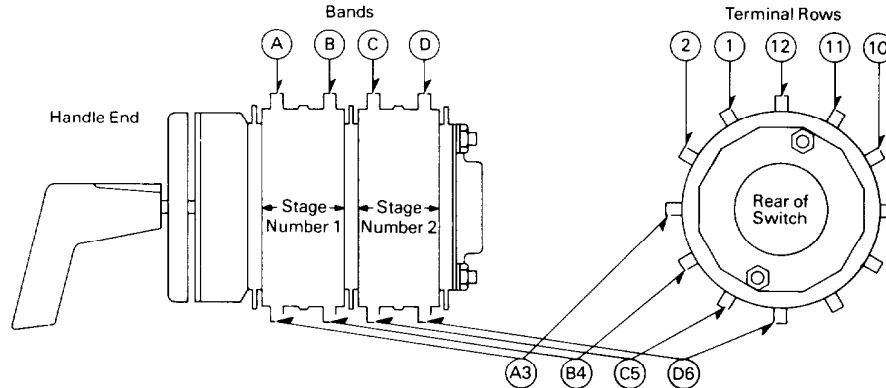
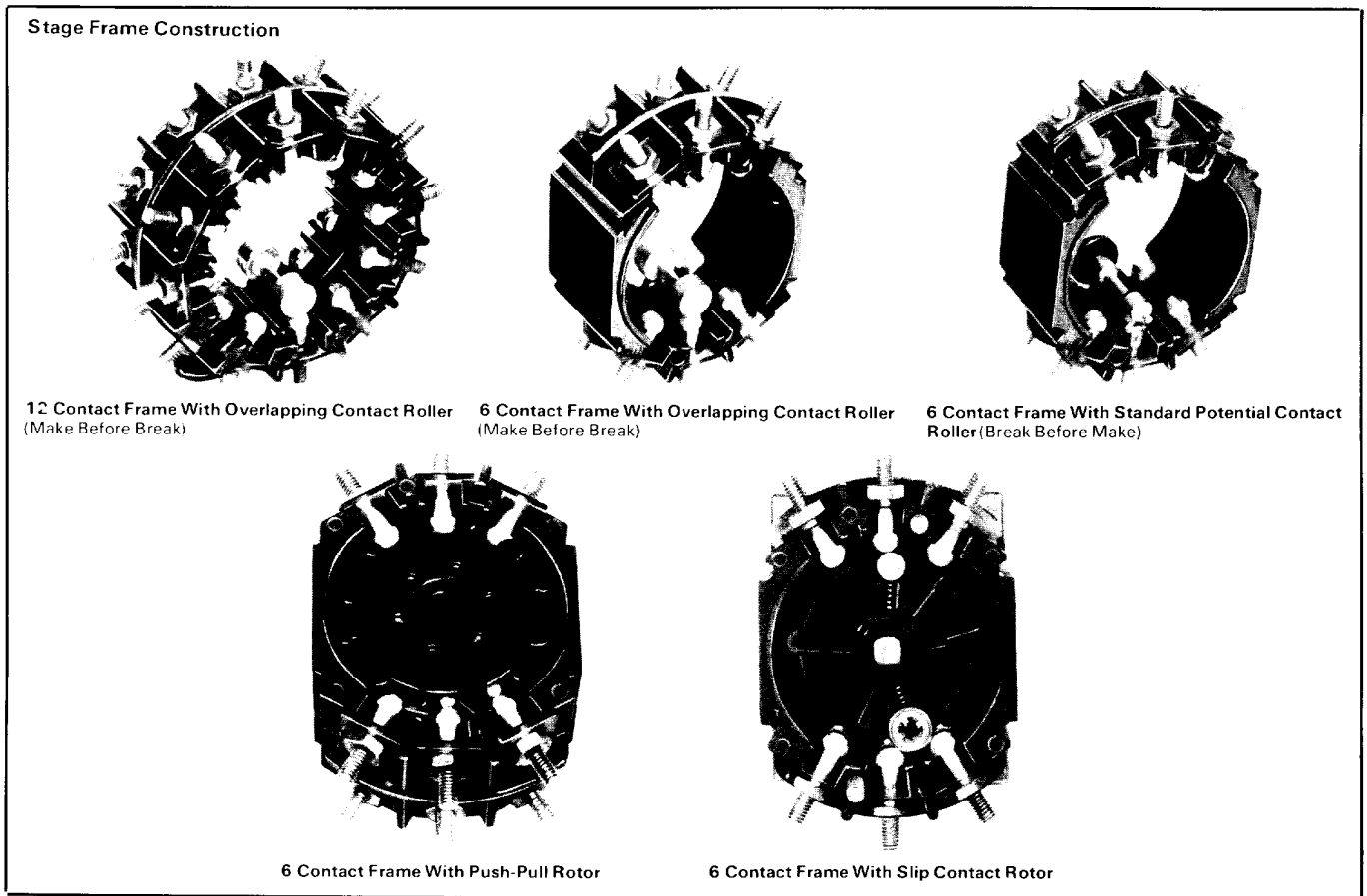


Figure 1: Methods of Identifying Contact Terminal Letter of Bands, Numbered Rows.



ROTOR CONSTRUCTION

The Type W-2 switch is designed to provide an almost unlimited number of contact arrangements by varying the assembly of a small number of standard parts. Stators (stage frames) are available with either six or twelve contact pairs per stage. The number of contact closures per position and the number of required posi-

tions determine the rotor configuration. Stator-rotor combinations are assembled to suit a particular application.

The tabulations below show some typical stator-rotor combinations and the resulting contact arrangements. The illustrations are for a single stage. The Type W-2 switch can consist of up to 8 compatible stages.

Six Contact Stator

Rotor Configuration	Resulting Contact Operation	Position Available	Function																
	<table border="1"> <thead> <tr> <th>CONTACT</th> <th>POSITION</th> </tr> <tr> <td></td> <td>1 0 7</td> </tr> </thead> <tbody> <tr> <td>A11-B11</td> <td>X</td> </tr> <tr> <td>A12-B12</td> <td>X</td> </tr> <tr> <td>A1-B1</td> <td>X</td> </tr> <tr> <td>A5-B5</td> <td>X</td> </tr> <tr> <td>A6-B6</td> <td>X</td> </tr> <tr> <td>A7-B7</td> <td>X</td> </tr> </tbody> </table>	CONTACT	POSITION		1 0 7	A11-B11	X	A12-B12	X	A1-B1	X	A5-B5	X	A6-B6	X	A7-B7	X		Two Contacts Closed in Each of Three Positions
CONTACT	POSITION																		
	1 0 7																		
A11-B11	X																		
A12-B12	X																		
A1-B1	X																		
A5-B5	X																		
A6-B6	X																		
A7-B7	X																		
	<table border="1"> <thead> <tr> <th>CONTACT</th> <th>POSITION</th> </tr> <tr> <td></td> <td>1 2 3 4</td> </tr> </thead> <tbody> <tr> <td>A11-B11</td> <td>X</td> </tr> <tr> <td>A12-B12</td> <td>X</td> </tr> <tr> <td>A1-B1</td> <td>X</td> </tr> <tr> <td>A5-B5</td> <td>X</td> </tr> <tr> <td>A6-B6</td> <td>X</td> </tr> <tr> <td>A7-B7</td> <td>X</td> </tr> </tbody> </table>	CONTACT	POSITION		1 2 3 4	A11-B11	X	A12-B12	X	A1-B1	X	A5-B5	X	A6-B6	X	A7-B7	X		One Contact Closed in Each of Six Positions
CONTACT	POSITION																		
	1 2 3 4																		
A11-B11	X																		
A12-B12	X																		
A1-B1	X																		
A5-B5	X																		
A6-B6	X																		
A7-B7	X																		
	<table border="1"> <thead> <tr> <th>CONTACT</th> <th>POSITION</th> </tr> <tr> <td></td> <td>1 2</td> </tr> </thead> <tbody> <tr> <td>A11-B11</td> <td>X</td> </tr> <tr> <td>A12-B12</td> <td>X</td> </tr> <tr> <td>A1-B1</td> <td>X</td> </tr> <tr> <td>A5-B5</td> <td>X</td> </tr> <tr> <td>A6-B6</td> <td>X</td> </tr> <tr> <td>A7-B7</td> <td>X</td> </tr> </tbody> </table>	CONTACT	POSITION		1 2	A11-B11	X	A12-B12	X	A1-B1	X	A5-B5	X	A6-B6	X	A7-B7	X		Two Contacts Closed in Twelve O'clock Position - Four Contacts Closed in One O'clock Position
CONTACT	POSITION																		
	1 2																		
A11-B11	X																		
A12-B12	X																		
A1-B1	X																		
A5-B5	X																		
A6-B6	X																		
A7-B7	X																		
	<table border="1"> <thead> <tr> <th>CONTACT</th> <th>POSITION</th> </tr> <tr> <td></td> <td>2 1</td> </tr> </thead> <tbody> <tr> <td>A11-B11</td> <td>X</td> </tr> <tr> <td>A12-B12</td> <td>X</td> </tr> <tr> <td>A1-B1</td> <td>X</td> </tr> <tr> <td>A5-B5</td> <td>X</td> </tr> <tr> <td>A6-B6</td> <td>X</td> </tr> <tr> <td>A7-B7</td> <td>X</td> </tr> </tbody> </table>	CONTACT	POSITION		2 1	A11-B11	X	A12-B12	X	A1-B1	X	A5-B5	X	A6-B6	X	A7-B7	X		Four Contacts Closed in Twelve O'clock Position - Two Contacts Closed in One O'clock Position
CONTACT	POSITION																		
	2 1																		
A11-B11	X																		
A12-B12	X																		
A1-B1	X																		
A5-B5	X																		
A6-B6	X																		
A7-B7	X																		

Slip Rotor (Six Contact Frame Only)

	<table border="1"> <thead> <tr> <th>CONTACT</th> <th>POSITION</th> </tr> <tr> <td></td> <td>11 12 1 1</td> </tr> </thead> <tbody> <tr> <td>A11-B11</td> <td>X</td> </tr> <tr> <td>A12-B12</td> <td>X</td> </tr> <tr> <td>A1-B1</td> <td>X</td> </tr> <tr> <td>A5-B5</td> <td>X</td> </tr> <tr> <td>A6-A7</td> <td>X</td> </tr> <tr> <td>B5-B6</td> <td>X</td> </tr> <tr> <td>B6-B7</td> <td>X</td> </tr> </tbody> </table>	CONTACT	POSITION		11 12 1 1	A11-B11	X	A12-B12	X	A1-B1	X	A5-B5	X	A6-A7	X	B5-B6	X	B6-B7	X		Slip Rotor: Top Portion - One Contact Closed in Each of Three Positions. Lower Portion - Two Contacts Closed in Each of Two Positions.
CONTACT	POSITION																				
	11 12 1 1																				
A11-B11	X																				
A12-B12	X																				
A1-B1	X																				
A5-B5	X																				
A6-A7	X																				
B5-B6	X																				
B6-B7	X																				

Pull Rotor

	<table border="1"> <thead> <tr> <th>CONTACT</th> <th>POSITION</th> </tr> <tr> <td></td> <td>11 12 1 2</td> </tr> </thead> <tbody> <tr> <td>C12-C1</td> <td>X</td> </tr> <tr> <td>D12-D1</td> <td>X</td> </tr> <tr> <td>E6-C7</td> <td>X</td> </tr> <tr> <td>D6-D7</td> <td>X</td> </tr> </tbody> </table>	CONTACT	POSITION		11 12 1 2	C12-C1	X	D12-D1	X	E6-C7	X	D6-D7	X		Two Pull to Make and Two Pull to Break Contacts Per Stage - Maximum of Four Pull Stages Per Switch
CONTACT	POSITION														
	11 12 1 2														
C12-C1	X														
D12-D1	X														
E6-C7	X														
D6-D7	X														

Twelve Contact Stator

Rotor Configuration	Resulting Contact Operation	Position Available	Function																												
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CONTACT	POSITION																														
	1 2 3 4 5 6 7 8 9 10 11																														
A12-B12	X																														
A1-B1	X																														
A2-B2	X																														
A3-B3	X																														
A4-B4	X																														
A5-B5	X																														
A6-B6	X																														
A7-B7	X																														
A8-B8	X																														
A9-B9	X																														
A10-B10	X																														
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CONTACT	POSITION																														
	10 11 12 1 2 3																														
A10-B10	X																														
A11-B11	X																														
A12-B12	X																														
A1-B1	X																														
A2-B2	X																														
A3-B3	X																														
A4-B4	X																														
A5-B5	X																														
A6-B6	X																														
A7-B7	X																														
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A9-B9	X																														
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CONTACT	POSITION																														
	11 12 1 2																														
A11-B11	X																														
A12-B12	X																														
A1-B1	X																														
A2-B2	X																														
A3-B3	X																														
A4-B4	X																														
A5-B5	X																														
A6-B6	X																														
A7-B7	X																														
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A9-B9	X																														
A10-B10	X																														
	<table border="1"> <thead> <tr> <th>CONTACT</th> <th>POSITION</th> </tr> <tr> <td></td> <td>12 1</td> </tr> </thead> <tbody> <tr> <td>A11-B11</td> <td>X</td> </tr> <tr> <td>A12-B12</td> <td>X</td> </tr> <tr> <td>A1-B1</td> <td>X</td> </tr> <tr> <td>A2-B2</td> <td>X</td> </tr> <tr> <td>A3-B3</td> <td>X</td> </tr> <tr> <td>A4-B4</td> <td>X</td> </tr> <tr> <td>A5-B5</td> <td>X</td> </tr> <tr> <td>A6-B6</td> <td>X</td> </tr> <tr> <td>A7-B7</td> <td>X</td> </tr> <tr> <td>A8-B8</td> <td>X</td> </tr> <tr> <td>A9-B9</td> <td>X</td> </tr> <tr> <td>A10-B10</td> <td>X</td> </tr> </tbody> </table>	CONTACT	POSITION		12 1	A11-B11	X	A12-B12	X	A1-B1	X	A2-B2	X	A3-B3	X	A4-B4	X	A5-B5	X	A6-B6	X	A7-B7	X	A8-B8	X	A9-B9	X	A10-B10	X		Six Contacts Closed in Each of Two Positions
CONTACT	POSITION																														
	12 1																														
A11-B11	X																														
A12-B12	X																														
A1-B1	X																														
A2-B2	X																														
A3-B3	X																														
A4-B4	X																														
A5-B5	X																														
A6-B6	X																														
A7-B7	X																														
A8-B8	X																														
A9-B9	X																														
A10-B10	X																														

Pull Rotor

	<table border="1"> <thead> <tr> <th>CONTACT</th> <th>POSITION</th> </tr> <tr> <td></td> <td>9 10 11 12 1 2</td> </tr> </thead> <tbody> <tr> <td>C12-C1</td> <td>X</td> </tr> <tr> <td>D12-D1</td> <td>X</td> </tr> <tr> <td>E2-C3</td> <td>X</td> </tr> <tr> <td>D2-D3</td> <td>X</td> </tr> <tr> <td>C4-C5</td> <td>X</td> </tr> <tr> <td>B4-D5</td> <td>X</td> </tr> <tr> <td>C6-C7</td> <td>X</td> </tr> <tr> <td>D6-D7</td> <td>X</td> </tr> <tr> <td>C8-C9</td> <td>X</td> </tr> <tr> <td>D8-D9</td> <td>X</td> </tr> <tr> <td>C10-C11</td> <td>X</td> </tr> <tr> <td>D10-D11</td> <td>X</td> </tr> </tbody> </table>	CONTACT	POSITION		9 10 11 12 1 2	C12-C1	X	D12-D1	X	E2-C3	X	D2-D3	X	C4-C5	X	B4-D5	X	C6-C7	X	D6-D7	X	C8-C9	X	D8-D9	X	C10-C11	X	D10-D11	X		Six Pull to Make and Six Pull to Break Contacts Per Stage - Maximum of Four Pull Stages Per Switch
CONTACT	POSITION																														
	9 10 11 12 1 2																														
C12-C1	X																														
D12-D1	X																														
E2-C3	X																														
D2-D3	X																														
C4-C5	X																														
B4-D5	X																														
C6-C7	X																														
D6-D7	X																														
C8-C9	X																														
D8-D9	X																														
C10-C11	X																														
D10-D11	X																														

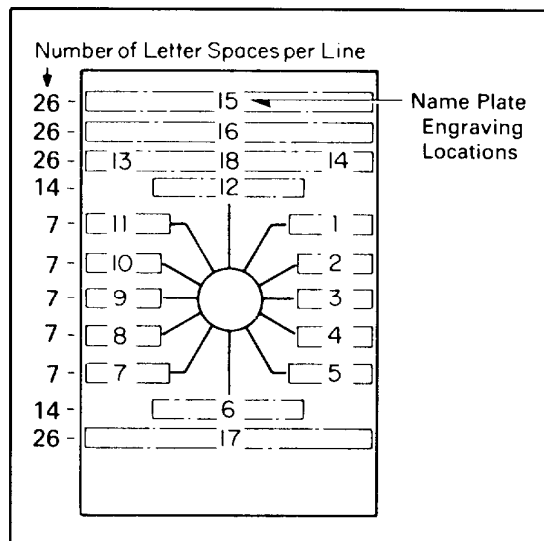
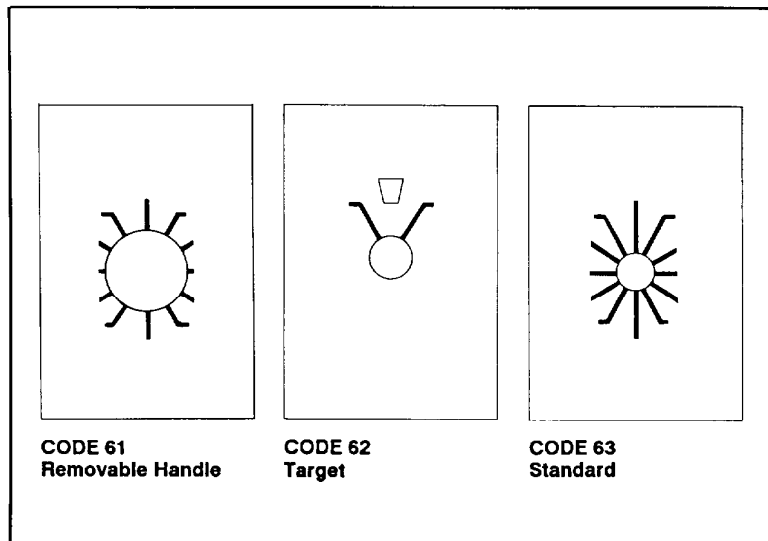
Nameplates

BLANK NAMEPLATES

The nameplates below are the standard blank nameplates available from stock. To order select the code number to meet the application.
NOTE: Radial lines etched on blank nameplates will not be blackened in. On engraved nameplates, only the radial lines for engraved positions will be blackened in.

ENGRAVED NAMEPLATES

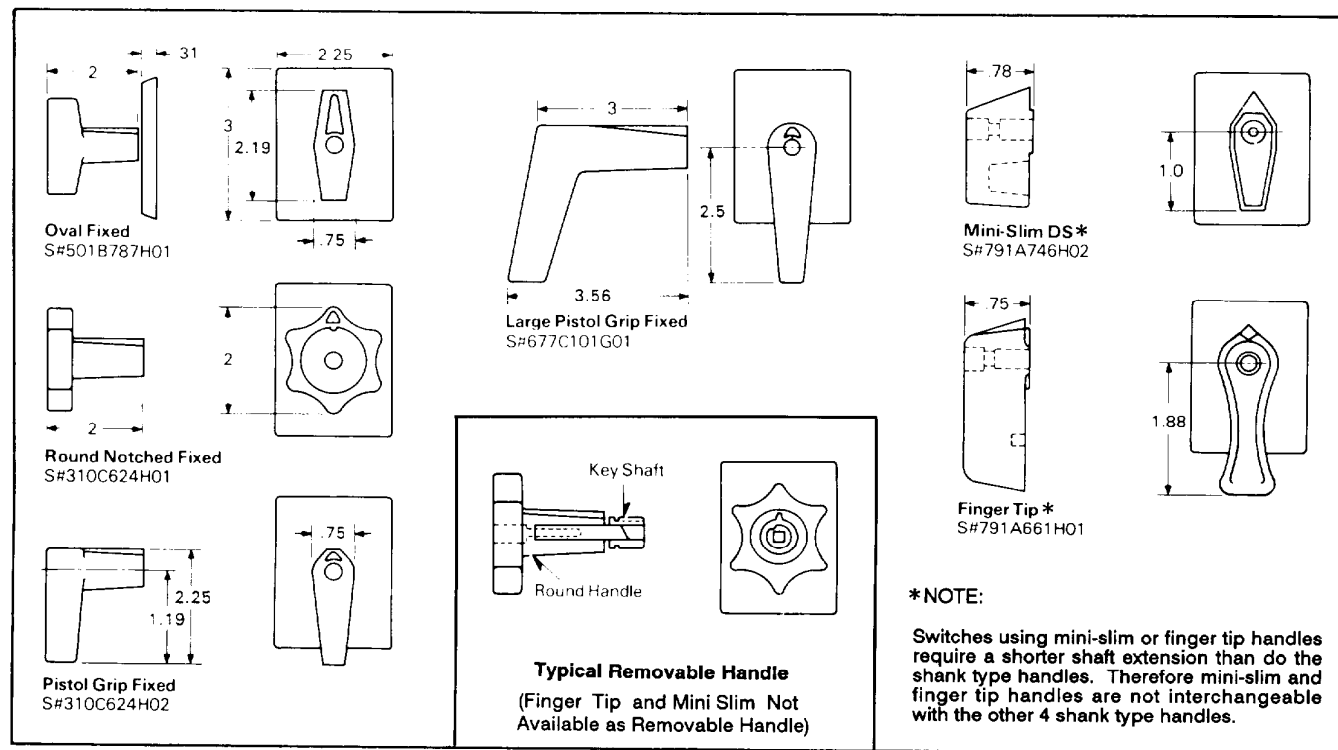
Use the chart below to specify engraving. Indicate engraving locations by line numbers shown. Character space allowance is the same for Code 61, 62 and 63 nameplates. Line 12 is not available on Code 62 (target) nameplate.



Handles

Handles are made of a phenolic insulating material. Molded recessed arrows assist in handle positioning. The six basic shapes are shown below. Fixed handles are secured to the shaft by a screw through the front of the

handle. When ordering removable handles, please specify handle shape, switch number used on and position in which it is to be removable.

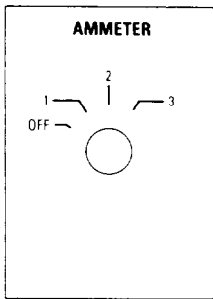


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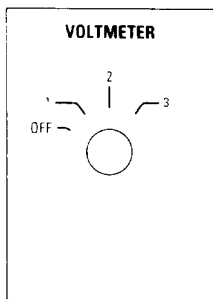
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Preengraved Nameplates

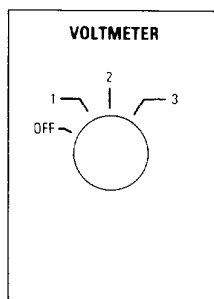
The nameplates listed below are a sampling of preengraved nameplates available at the factory. Any desired nameplate markings deviating from the outline below must be ordered as shown on Page 7.



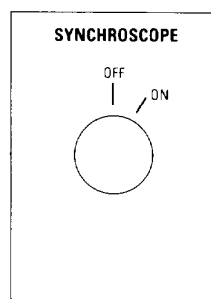
63F-4A13



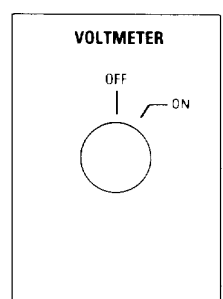
63F-4V15A



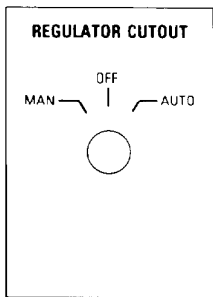
61F-4V15A



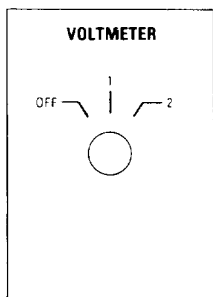
61G-2S17



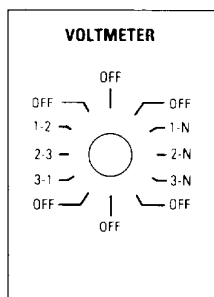
61G-2V14



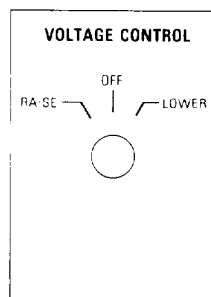
63F-3R25C



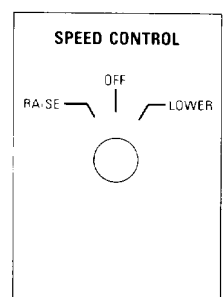
63F-3V14A



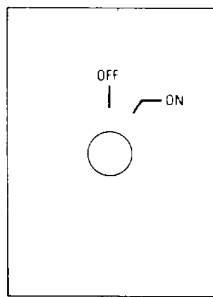
63J-12V45



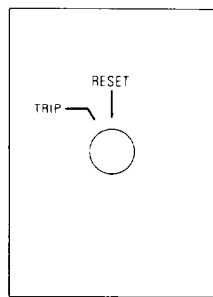
63F-3V27G



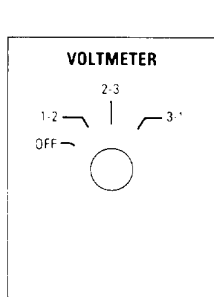
63F-3S25R



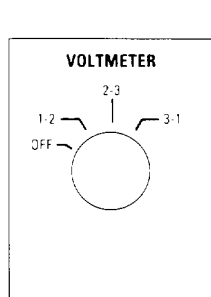
63G-2X5



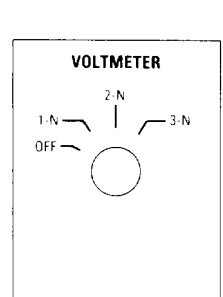
63F-2X9R



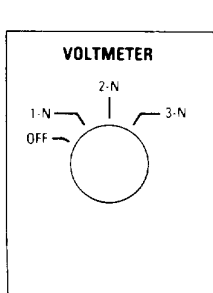
63F-4V21



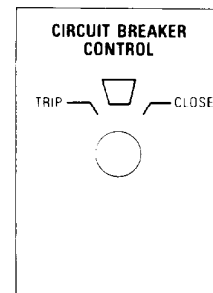
61F-4V21



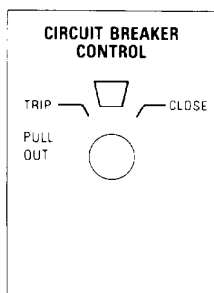
63F-4V21AL



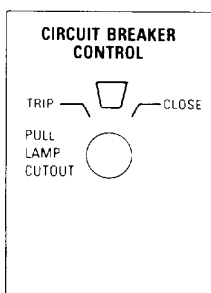
61F-4V21AL



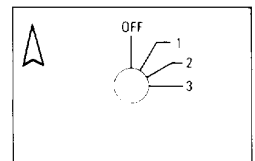
62F-2C30G



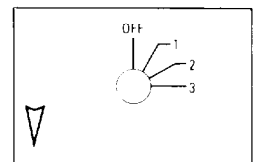
62J-4C37H



62J-5C44



60J-4X6AM



60J-4X6AN

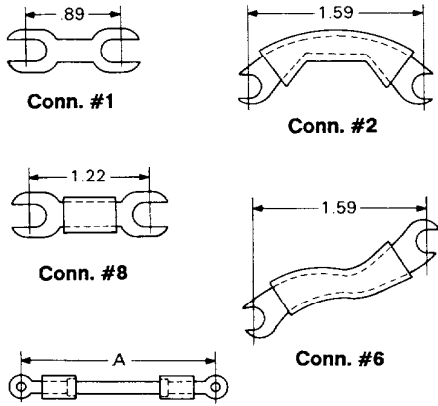


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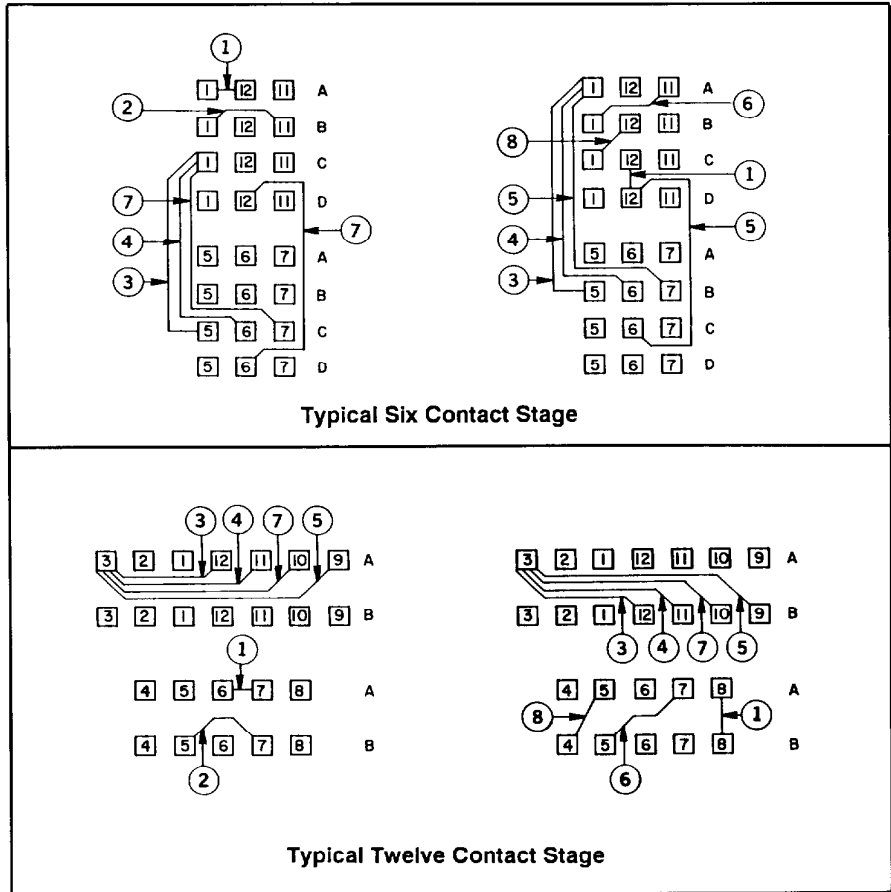
TERMINAL CONNECTORS

The Type W-2 switch gains additional flexibility with the use of terminal connectors (jumpers) applied to the switch terminals. The chart below shows the connectors required for the most common applications. Order connectors by style number from the reference list.



Typical Wire and Lug Type Connector

CONN.	STYLE NUMBER	DIM"A"
#1	677C519H08	.89 in.
#2	677C519G01	1.59 in.
#3	677C782G01	3.50 in.
#4	677C782G02	4.25 in.
#5	677C782G04	5.50 in.
#6	677C519G05	1.59 in.
#7	677C782G03	5.00 in.
#8	677C519G07	1.22 in.
#9	677C782G05	6.00 in.
#10	677C782G06	7.25 in.
#11	677C782G07	9.75 in.
#12	677C782G08	10.50 in.



Ratings

Continuous Ratings		20 Amperes, 600 Volts		
Interrupting Ratings				
Voltage	Amperes			
	General Purpose	Pilot Duty 35% P.F. Normal	Inrush	2 Contacts in Series General Purpose
Standard Contact				
600 Volts Ac	8	2.4	12	20
240 Volts Ac	20	6	30	40
110 Volts Ac	30	10	60	60
250 Volts Dc	1.65	1.1	...	9.5
125 Volts Dc	5	2.2	...	20
Note: Adjacent poles (contacts in same chamber) must be connected at same polarity				
Slip Contacts				
600 Volts Ac	8	2.4	12	...
240 Volts Ac	20	6	30	...
110 Volts Ac	30	10	60	...
250 Volts Dc	1	.55
125 Volts Dc	3.5	1.1
Note: 2 adjacent side pole double throw contacts (in same chamber or stage) must be connected at same polarity				
Pull and ammeter contacts are not given ratings as they do not interrupt loads. Normally closed ammeter contact has a continuous rating of 10 amperes.				

KEY LOCK SWITCHES

The Type W-2 switch can be supplied with 1, 2, or 3 key locks. In the case of one lock, it can be mounted at the top or to the left or the right of the switch handle. For one lock, top mounting is considered the standard. When two locks are required, the normal mounting is one to the left and one to the right of the switch handle.

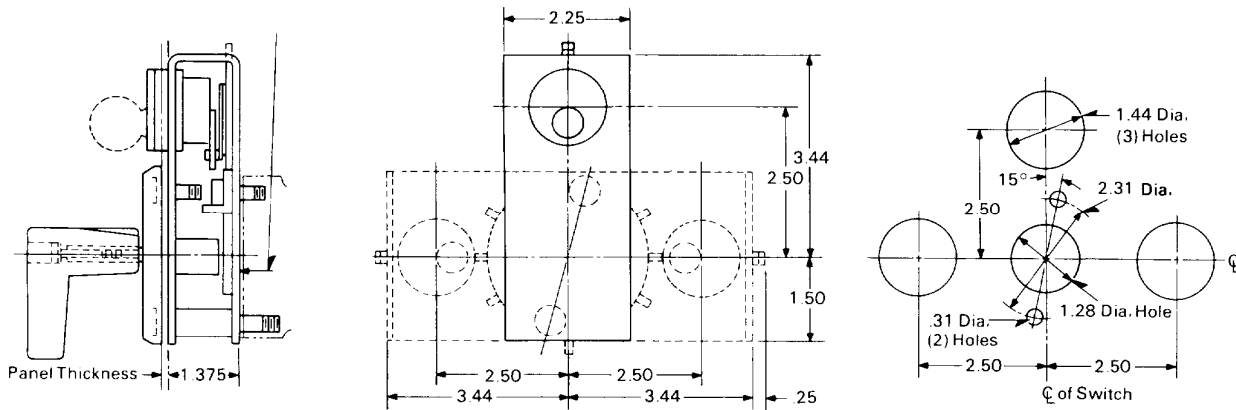
When several switches are supplied with locks, or when a single switch is supplied with more than one lock, such locks may be keyed alike or differently as required. In either case, ELECTRO-SWITCH will supply Yale tumbler pin key lock cylinders from factory stock. Two keys are provided with each lock, and keys are removable in the locked position(s) only. When ordering, the fol-

lowing must be specified:

- 1) The number and location of locks.
- 2) The position in which the switch is to be locked and the key removed.
- 3) Whether locks are to be keyed alike or keyed differently.

KEY INTERLOCKING

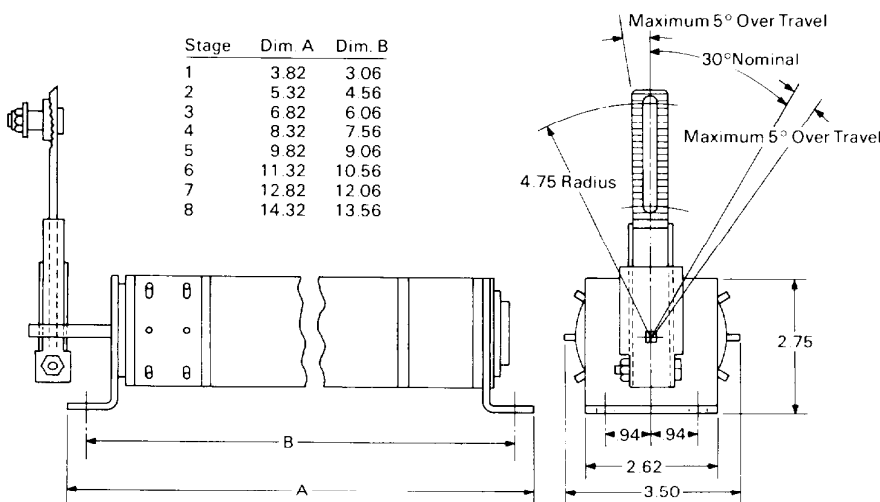
Type W-2 switches may be ordered with locks whose keys are to be used to lock other equipment such as circuit breakers, disconnect switches, etc. Contact the factory for additional information.



AUXILIARY SWITCH

The type W-2 Auxiliary Switch is designed around the six contact stage frame and rotor. It is two positions and is supplied with or without an over-travel lever. Levers are available with adjustable linkage (serrated styles) or non-adjustable (solid lever pin).

Nameplates are not supplied. Figures 1 & 2 are typical single stages. Combinations of up to eight compatible stages are available.



CONTACT	POSITION	
	12	1
A11-B11	X	
A12-B12		X
A1-B1	X	
A5-B5	X	
A6-B6		X
A7-B7	X	

Figure 1

CONTACT	POSITION	
	12	1
A11-B11		X
A12-B12	X	
A1-B1		X
A5-B5		X
A6-B6	X	
A7-B7		X

Figure 2



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ORDERING INSTRUCTIONS:

The Type W-2 switch can be furnished in either of two ways:

1 - as a **COMPLETE** unit consisting of a switch, a handle and nameplate, as well as factory installed external jumpers when required.

2 - as a **BASIC** switch, which consists of the switch only. Handles and nameplates (pages 7-8), and jumpers (page 9) can be ordered separately.

On pages 13 to 47 are a selection of typical switch development charts (figures 1 to 154). Table 1 below is an index to these figures listed by application. Use Table 1 to find a selection of switch developments for a specific application. Style numbers are listed at the figures.

Table 2 is an index to these figures by style number. Known style numbers can be cross referenced to the appropriate switch development using Table 2.

For custom contacting or special features other than those shown in this section, complete application work sheet on page 49 and forward to the factory. ELECTROSWITCH will assign and advise style number.

The style numbers shown in this publication apply to switches for mounting on 1/8 to 1/4 inch thick panels. Switches for thicker panels (up to two inches) are available on special order from the factory.

Removable Handles are not supplied as part of switch and must be ordered separately. If a removable handle is required, specify the shape of the handle, the position in which it is to be removable and the style number of the switch on which it is to be used.

TABLE 1 - INDEX BY APPLICATION

Application	Figure	Application	Figure
Ammeter	1 to 18	Pilot Wire Test	56
Voltmeter	19 to 33	Regulator Cutout	57 to 58
Ammeter/Voltmeter	34 to 37	Electrode Control	59
Voltage Control	38 to 40	Motor Control	60 to 61
Synchroscope	41 to 42	Speed Control	62
Frequency Meter	43	Circuit Breaker Control	63 to 83
Wattmeter	44 to 50	Temperature	84 to 90
Power Factor Meter	51 to 55	General Application	91 to 107
		Basic Switches	108 to 154

TABLE 2 - INDEX BY STYLE NUMBER

STYLE	FIGURE	STYLE	FIGURE	STYLE	FIGURE	STYLE	FIGURE
505A600G01	B 116	505A628G01	B 114	505A668G01	B 109	505A705G02	C 27
505A601G01	B 2	505A630G01	B 130	505A669G01	B 109	505A705G03	C 28
505A602G01	B 115	505A631G01	B 133	505A670G01	B 112	505A706G01	C 91
505A603G01	B 115	505A632G01	B 133	505A672G01	B 113	505A706G02	C 91
505A604G01	B 25	505A633G01	B 136	505A684G01	B 114	505A706G03	C 91
505A605G01	B 26	505A634G01	B 111	505A685G01	B 114	505A706G55	C 97
505A606G01	B 108			505A700G01	C 1	505A709G01	C 85
505A607G01	B 111	505A638G01	B 117	505A701G01	C 2A	505A711G01*	C 86
505A612G01	B 118	505A644G01	B 154	505A701G02	C 2	505A711G03	C 86
505A613G01	B 63	505A645G01	B 143	505A701G05	C 3	505A712G01	C 57
505A614G01	B 65	505A647G01	B 108	505A702L02	C 103	505A712G90	C 44
505A615G01	B 118	505A649G01	B 115	505A702L03	C 92	505A712G91	C 53
505A616G01	B 59	505A650G01	B 146	505A702G01	C 20	505A712G92	C 106
505A617G01	B 68	505A651G01	B 146	505A702G02	C 21	505A713G01	C 63
505A618G01	B 66	505A652G01	B 50	505A702G03	C 22	505A713G02	C 64
505A619G01	B 128	505A653G01	B 51	505A702G04	C 23	505A713G03	C 63
505A620G01	B 122	505A654G01	B 111	505A702G05	C 24	505A714G01	C 65
505A621G01	B 113	505A655G01	B 41	505A703G01	C 38	505A714G02	C 65
505A622G01	B 112	505A657G01	B 115	505A703G02	C 62	505A715G01	C 39
505A623G01	B 108	505A659G01	B 147	505A703G06	C 38	505A715G05	C 39
505A624G01	B 113	505A660G01	B 148	505A703G07	C 62	505A715G32	C 106
505A625G01	B 112	505A661G01	B 150	505A703G51	C 103	505A716G01	C 40
505A626G01	B 124	505A664G01	B 130	505A704G01	C 25	505A716G02	C 59
505A627G01	B 124	505A667G01	B 109	505A705G01	C 26	505A716G03	C 60

(B) Basic Switch (C) Complete Switch (*) Switch for Removable Handle - See Ordering Instructions Above



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STYLE	FIGURE	STYLE	FIGURE	STYLE	FIGURE	STYLE	FIGURE
505A716G04	C 59	505A757G03	C 42	508A262G01	C 71	661A150G01	B 147
505A716G05	C 60	505A762G01*	C 24	508A262G03	C 71	661A152G01*	B 146
505A717G02	C 68			508A264G01	C 72	661A208G01*	C 2A
505A717G03	C 68	505A765G03	C 88	508A264G02	C 72	661A208G03	C 2A
505A718G01	C 66	505A779G05*	C 49	508A281G02	C 73	661A210G01	C 89
505A718G15	C 67	505A781G03	C 96	508A284G01	C 74	661A210G06	C 87
505A720G01	C 69	505A782G01	C 96	508A298G02	C 4	663A175G01	B 149
505A720G03	C 69	505A797G02	C 46	508A299G03	C 34	663A176G01	B 148
505A722G01	C 95	508A107G01	B 115	508A299G09	C 35	663A177G01	B 108
505A722G02	C 95	508A108G01	B 115	508A300G01	B 135	663A195G01	B 115
505A722G03	C 95	508A110G01	B 116	508A301G01	B 136	663A245G06	C 61
505A723G01	C 91	508A111G01	B 117	508A302G01	B 137	663A340G01	B 154
505A723G02	C 91	508A112G01	B 117	508A303G01	B 137	663A454G01*	C 90
505A723G03	C 91	508A118G01	B 118	508A307G01	B 139	781A123G01	B 152
505A725G01	C 95	508A119G01	B 118	508A308G01	B 139	781A167G01	B 134
505A725G06	C 95	508A124G01	B 119	508A310G01	B 140	781A181G01	B 144
505A725G11	C 95	508A125G01	B 119	508A311G01	B 140	781A254G01	C 84
505A726G14	C 107	508A126G01	B 120	508A314G01	B 141	781A377G01	B 117
505A727G15	C 107	508A127G01	B 120	508A317G01	B 142	781A489G01*	C 88
505A733G01	C 93	508A128G01	B 121	508A320G01	B 143	787A976G01	C 4
505A733G17	C 98	508A129G01	B 121	508A323G01	B 144	787A976G02	C 5
505A733G18	C 99	508A133G01	B 122	508A326G01	B 145	787A976G03	C 6
505A734G09	C 45	508A143G01	B 123	508A334G01	B 149	787A976G04	C 7
505A738G07	C 75	508A144G01	B 123	508A342G01	B 151	787A977G01	C 36
505A740G06	C 47	508A145G01	B 124	508A343G01	B 152	787A977G02	C 37
505A740G07	C 48	508A146G01	B 124	508A344G01	B 152	787A984G01	C 12
505A745G01	C 94	508A161G01	B 125	508A351G01	B 153	787A984G02	C 13
505A745G17	C 100	508A162G01	B 126	508A363G01	B 138	787A984G03	C 14
505A745G18	C 101	508A163G01	B 127	508A364G01	B 138	787A984G04	C 15
505A745G19	C 102	508A164G01	B 127	508A368G01	B 56	787A984G05	C 16
505A747G01	C 19	508A166G01	B 129	508A370G01	B 141	787A984G06	C 17
505A747G02	C 19	508A167G01	B 129	508A396G01	B 110	787A984G07	C 18
505A748G01*	C 21	508A173G01	B 133	508A423G16	C 104	787A989G02	C 2
505A748G02	C 21	508A175G01	B 130	508A423G17	C 105	800A426G01*	C 4
505A749G01*	C 23	508A181G01	B 131	508A463G04	C 8	800A426G02*	C 5
505A749G02	C 23	508A183G01	B 132	508A463G05	C 9	802A231G01	C 76
505A752G01*	C 50	508A184G01	B 132	508A467G01*	C 43	802A470G01*	C 55
505A752G02	C 50	508A189G01	B 125	508A467G02	C 43	3562A01G01	C 29
505A753G01*	C 51	508A196G01	B 134	508A467G03	C 43	3562A01G02	C 30
505A753G02	C 51	508A199G01	B 135	508A468G01	C 56	3562A01G03	C 31
505A754G01*	C 52	508A207G02	C 77	508A480G01	C 81	3562A01G04	C 32
505A754G02	C 52	508A218G07	C 78	508A480G08	C 82	3562A01G05	C 33
505A754G03	C 55	508A224G02	C 58	508A481G01	C 10	3669A41G01*	C 2
505A754G04*	C 46	508A229G01	C 79	508A496G03	C 54	8116A39G01	C 80
505A755G01*	C 41	508A244G01	C 70	658A578G01	B 148		
505A755G02	C 41	508A244G02	C 70	658A594G01	B 122		
505A757G01*	C 42	508A247G02	C 49	658A615G02	C 11		
		508A255G03	C 83	661A105G01	B 116		

(B) Basic Switch (C) Complete Switch (*) Switch for Removable Handle - See Ordering Instructions

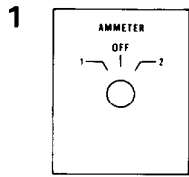


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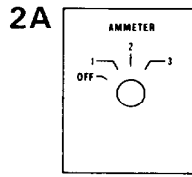
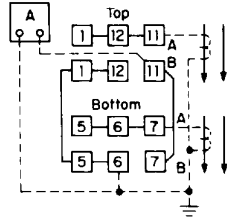
Position Tabulations

All Wiring Diagrams Contained in This Bulletin are to be Considered as "TYPICAL." Nameplates shown are supplied with switch.



Ammeter
2 Phase
 Style No. 505A700G01
 Handle: Round Fixed
 Contacts: Maintained
 Stages: 2, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

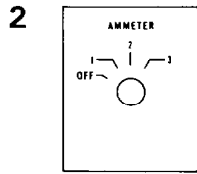
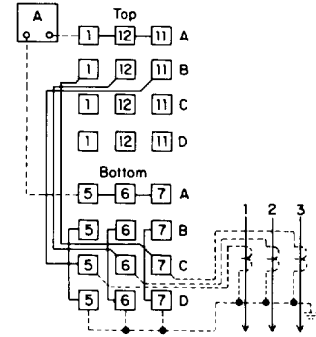
CONTACT	POSITION		
	1	2	OFF
A11-B11	X	X	
A12-B12	X	X	X
A1-B1			X
A5-B5	X	X	X
A6-B6	X	X	X
A7-B7	X	X	X



Ammeter
3 Phase-3 CT's
 Style No. 505A701G01
 Handle: Round Fixed
 Contacts: Maintained
 Stages: 2, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

CONTACT	POSITION					
	0	1	2	3	4	5
A11-B11	X	X	X			
A12-B12	X	X	X	X	X	
A1-B1				X	X	
A5-B5	X	X	X			
A6-B6			X	X	X	
A7-B7				X	X	
C11-D11	X	X	X	X	X	X
C12-D12	X	X	X	X	X	X
C1-D1	X	X	X	X	X	X
C5-D5	X	X	X	X	X	X
C6-D6	X	X	X	X	X	X
C7-D7	X	X	X	X	X	X

(R) Switch: S#661A208G01
 Removable Handle: S#661A208G03
 Removable in OFF Position Only

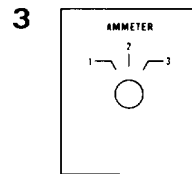
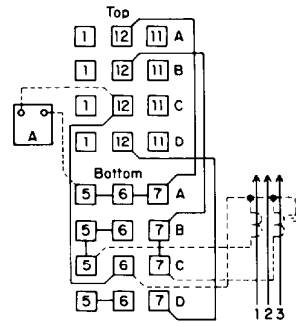


Ammeter
3 Phase-2 CT's
 Style No. 505A701G02
 Handle: Round Fixed
 Contacts: Maintained
 Stages: 2, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

CONTACT	POSITION					
	0	1	2	3	4	5
A11-B11	X	X	X			
A12-B12	X	X	X	X	X	
A1-B1				X	X	
A5-B5	X	X	X			
A6-B6			X	X	X	
A7-B7				X	X	
C11-D11	X	X	X	X	X	X
C12-D12	X	X	X	X	X	X
C1-D1	X	X	X	X	X	X
C5-D5	X	X	X	X	X	X
C6-D6	X	X	X	X	X	X
C7-D7	X	X	X	X	X	X

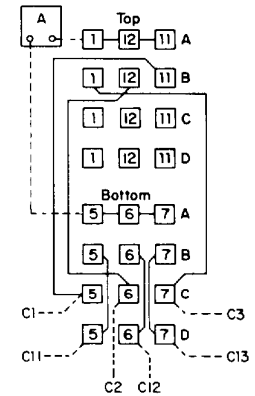
(R) Switch: S#3669A41G01
 Removable Handle: S#787A989G02
 Removable in OFF Position Only

(B) Switch: S#505A601G01



Ammeter
3 Phase-3 CT's
 Style No. 505A701G05
 Handle: Round Fixed
 Contacts: Maintained
 Stages: 2, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

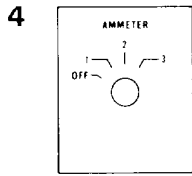
CONTACT	POSITION					
	1	2	3	4	5	6
A11-B11	X	X				
A12-B12		X	X	X		
A1-B1			X	X		
A5-B5	X	X				
A6-B6			X	X	X	
A7-B7				X	X	
C11-D11	X	X	X	X	X	X
C12-D12	X	X	X	X	X	X
C1-D1	X	X	X	X	X	X
C5-D5	X	X	X	X	X	X
C6-D6	X	X	X	X	X	X
C7-D7	X	X	X	X	X	X



NOTES:

- (R) = Switch for Removable Handle
- (B) = Basic Switch

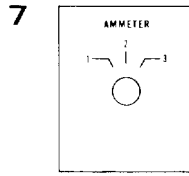
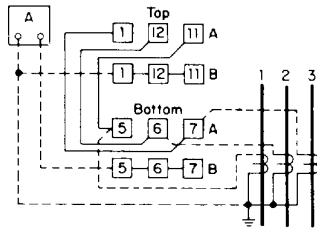
Position Tabulations, *Continued*



Ammeter
3 Phase-3 CT's (End of Circuit)
 Style No. 787A976G01
 Handle: Round Fixed
 Contacts: Maintained
 Stages: 1, Six Contact Frame
 Mounting: 1 8-1 4
 Target: No

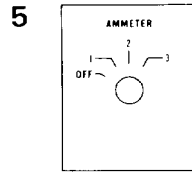
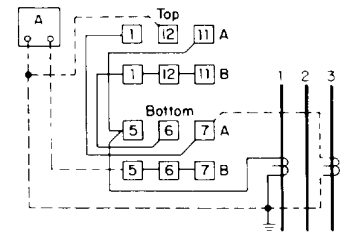
CONTACT	POSITION						
	OFF	-	1	-	2	-	3
A11-B11	X	X	X	X	X	X	X
A12-B12	X	X	X	X	X	X	X
A1-B1	X	X	X	X	X	X	X
A5-B5			X	X	X		
A6-B6				X	X	X	
A7-B7						X	X

(R) Switch: S#800A426G01
 Removable Handle S#508A298G02
 Removable in OFF Position Only



Ammeter
3 Phase-2 CT's (End of Circuit)
 Style No. 787A976G04
 Handle: Round Fixed
 Contacts: Maintained
 Stages: 1, Six Contact Frame
 Mounting: 1 8-1 4
 Target: No

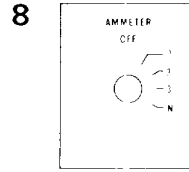
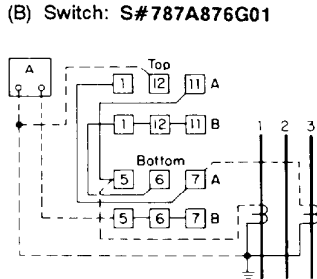
CONTACT	POSITION		
	1	2	3
A11-B11	X	X	X
A12-B12	X	X	X
A1-B1	X	X	X
A5-B5	X	X	
A6-B6	X	X	X
A7-B7			X



Ammeter
3 Phase-2 CT's (End of Circuit)
 Style No. 787A976G02
 Handle: Round Fixed
 Contacts: Maintained
 Stages: 1, Six Contact Frame
 Mounting: 1 8-1 4
 Target: No

CONTACT	POSITION						
	OFF	-	1	-	2	-	3
A11-B11	X	X	X	X	X	X	X
A12-B12	X	X	X	X	X	X	X
A1-B1	X	X	X	X	X	X	X
A5-B5			X	X	X		
A6-B6				X	X	X	
A7-B7						X	X

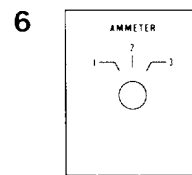
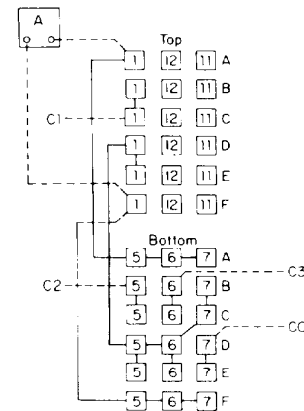
(R) Switch: S#800A426G02
 Removable Handle S#508A298G02
 Removable in OFF Position Only



Ammeter
3 CT's Phase to Neutral
 Style No. 508A463G04
 Handle: Round Fixed
 Contacts: Maintained
 Stages: 3, Six Contact Frame
 Mounting: 1/8 - 1/4
 Target: No

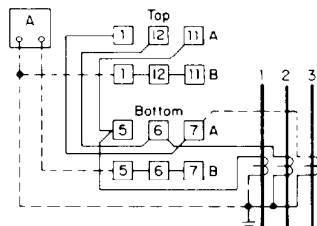
CONTACT	POSITION								
	OFF	-	1	-	2	-	3	-	N
A11-B11									
A12-B12	X	X							
A1-B1			X	X	X				
A5-B5					X	X	X		
A6-B6							X	X	X
A7-B7									X
C11-D11	X	X	X	X	X	X	X	X	X
C12-D12	X	X	X	X	X	X	X	X	X
C1-D1	X	X	X	X	X	X	X	X	X
C5-D5	X	X	X	X	X	X	X	X	X
C6-D6	X	X	X	X	X	X	X	X	X
C7-D7	X	X	X	X	X	X	X	X	X
E11-F11									
E12-F12	X	X							
E1-F1			X	X	X				
E5-F5					X	X	X		
E6-F6							X	X	X
E7-F7									X

(B) Switch: S#787A876G01



Ammeter
3 Phase-3 CT's (End of Circuit)
 Style No. 787A976G03
 Handle: Round Fixed
 Contacts: Maintained
 Stages: 1, Six Contact Frame
 Mounting: 1 8-1 4
 Target: No

CONTACT	POSITION		
	1	2	3
A11-B11	X	X	X
A12-B12	X	X	X
A1-B1	X	X	X
A5-B5	X	X	
A6-B6	X	X	X
A7-B7			X

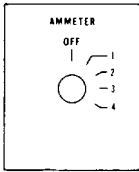


NOTES:

- (R) = Switch for Removable Handle
- (B) = Basic Switch

Position Tabulations, *Continued*

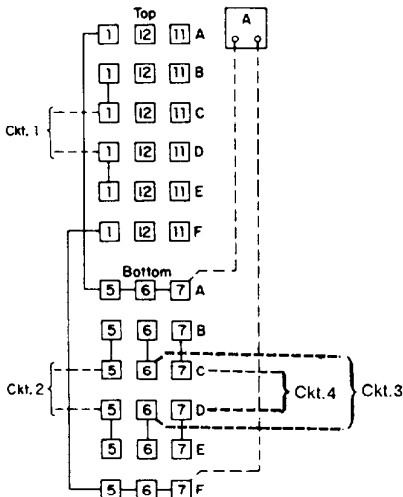
9



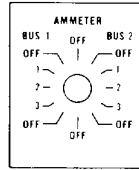
Ammeter
4 Ct.'s - Independent Circuits

Style No. 508A463G05
Handle: Round Fixed
Contacts: Maintained
Stages: 3, Six Contact Frame
Mounting: 1/8-1/4
Target: No

CONTACT	POSITION											
	-	-	-	Off	-	1	-	2	-	3	-	4
A11-B11	X	X										
A12-B12			X	X	X							
A1-B1					X	X	X					
A5-B5						X	X	X				
A6-B6									X	X	X	
A7-B7											X	X
C11-D11		X	X	X	X	X	X	X	X	X	X	X
C12-D12	X	X	X	X	X	X	X	X	X	X	X	X
C1-D1	X	X	X	X	X	X	X	X	X	X	X	X
C5-D5	X	X	X	X	X	X	X	X	X	X	X	X
C6-D6	X	X	X	X	X	X	X	X	X	X	X	X
C7-D7	X	X	X	X	X	X	X	X	X	X	X	X
E11-F11	X	X										
E12-F12			X	X	X							
E1-F1					X	X	X					
E5-F5						X	X	X				
E6-F6								X	X	X		
E7-F7										X	X	X



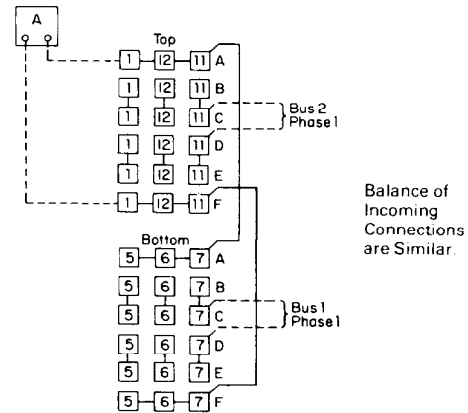
10



Ammeter
6 Ct.'s - Independent Circuits

Style No. 508A481G01
Handle: Round Fixed
Contacts: Maintained
Stages: 3, Six Contact Frame
Mounting: 1/8-1/4
Target: No

CONTACT	POSITION																
	0	0	0	-	1	-	2	-	3	-	0	0	-	3	-	1	-
A11-B11				X	X	X											
A12-B12							X	X	X								
A1-B1									X	X	X						
A5-B5												X	X	X			
A6-B6													X	X	X		
A7-B7															X	X	X
C11-D11	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
C12-D12	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
C1-D1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
C5-D5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
C6-D6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
C7-D7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
E11-F11	X	X															
E12-F12				X	X	X											
E1-F1					X	X	X										
E5-F5						X	X	X									
E6-F6								X	X	X							
E7-F7										X	X	X					

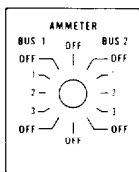


NOTES:

- (R) = Switch for Removable Handle
- (B) = Basic Switch

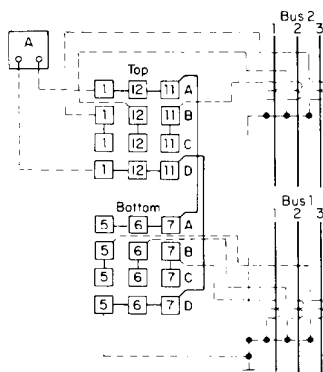
Position Tabulations, *Continued*

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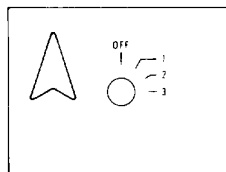


Ammeter
Two 3 Phase Circuits
Style No. 658A615G02
Handle: Round Fixed
Contacts: Maintained
Stages: 2 Six Contact Frame
Mounting: 1/8-1/4
Target: No

CONTACT	BUS 2						BUS 1					
	0	0	0	1	-	-	1	-	-	2	-	-
A11-B11				X	X	X						
A12-B12				X	X	X						
A1-B1							X	X	X			
A5-B5										X	X	X
A6-B6										X	X	X
A7-B7											X	X
C11-D11	X	X	X	X	X	X	X	X	X	X	X	X
C12-D12	X	X	X	X	X	X	X	X	X	X	X	X
C1-D1	X	X	X	X	X	X	X	X	X	X	X	X
C5-D5	X	X	X	X	X	X	X	X	X	X	X	X
C6-D6	X	X	X	X	X	X	X	X	X	X	X	X
C7-D7	X	X	X	X	X	X	X	X	X	X	X	X



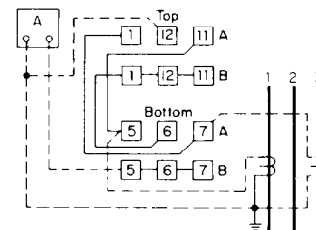
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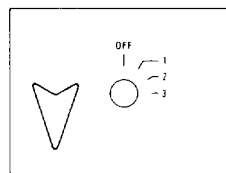
Ammeter
3 Phase-2 CT's (End of Circuit)
Style No. 787A984G02
Handle: Fixed, Mini-Slim DS
Contacts: Maintained
Stages: 1, Six Contact Frame
Mounting: 1 8-1 4
Target: No

CONTACT	POSITION					
	OFF	-	1	-	2	-
A11-B11	X	X	X	X	X	X
A12-B12	X	X	X	X	X	X
A1-B1	X	X	X	X	X	X
A5-B5			X	X	X	
A6-B6				X	X	X
A7-B7					X	X

Note:
Switch Mounted 90° From Standard



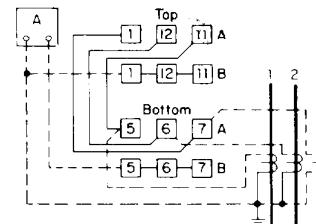
14



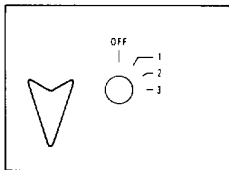
Ammeter
3 Phase-3 CT's (End of Circuit)
Style No. 787A984G03
Handle: Fixed, Mini-Slim DS
Contacts: Maintained
Stages: 1, Six Contact Frame
Mounting: 1 8-1 4
Target: No

CONTACT	POSITION					
	OFF	-	1	-	2	-
A11-B11	X	X	X	X	X	X
A12-B12	X	X	X	X	X	X
A1-B1	X	X	X	X	X	X
A5-B5			X	X	X	
A6-B6				X	X	X
A7-B7					X	X

Note:
Switch Mounted 90° From Standard



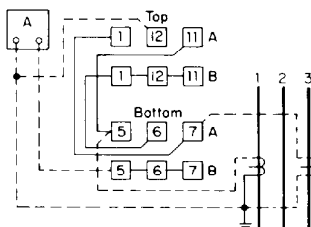
12



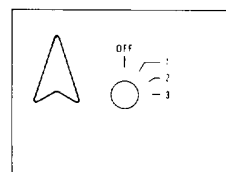
Ammeter
3 Phase-2 CT's (End of Circuit)
Style No. 787A984G01
Handle: Fixed, Mini-Slim DS
Contacts: Maintained
Stages: 1, Six Contact Frame
Mounting: 1 8-1 4
Target: No

CONTACT	POSITION					
	OFF	-	1	-	2	-
A11-B11	X	X	X	X	X	X
A12-B12	X	X	X	X	X	X
A1-B1	X	X	X	X	X	X
A5-B5			X	X	X	
A6-B6				X	X	X
A7-B7					X	X

Note:
Switch Mounted 90° From Standard



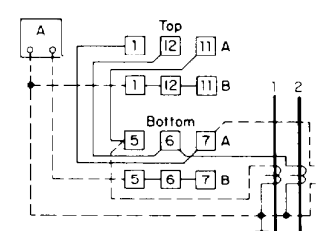
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Ammeter
3 Phase-3 CT's (End of Circuit)
Style No. 787A984G04
Handle: Fixed, Mini-Slim
Contacts: Maintained
Stages: 1, Six Contact Frame
Mounting: 1 8-1 4
Target: No

CONTACT	POSITION					
	OFF	-	1	-	2	-
A11-B11	X	X	X	X	X	X
A12-B12	X	X	X	X	X	X
A1-B1	X	X	X	X	X	X
A5-B5			X	X	X	
A6-B6				X	X	X
A7-B7					X	X

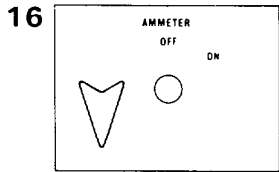
Note:
Switch Mounted 90° From Standard



NOTES:

- (R) = Switch for Removable Handle
- (B) = Basic Switch

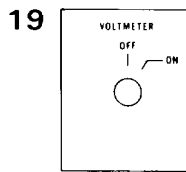
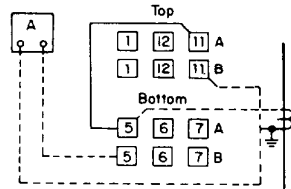
Position Tabulations, Continued



CONTACT	POSITION	
	OFF	ON
A11-B11	X	X
A5-B5	X	X

Note:
Switch Mounted 90° From Standard.

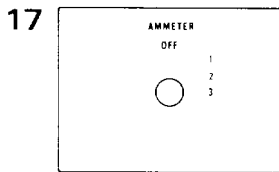
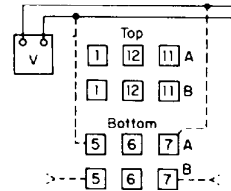
Ammeter
3 Phase-1 CT
Style No 787A984G05
Handle: Mini-Slim, Fixed
Contacts: Maintained
Stages: 1, Six Contact Frame
Mounting: 1/8-1/4
Target: No



CONTACT	POSITION	
	OFF	ON
A11-B11	X	X
A12-B12	X	X
A1-B1	X	X
A5-B5	X	X
A6-B6	X	X
A7-B7	X	X

Voltmeter
Single Phase
(R) Switch: S#505A747G01
Removable Handle: S# 505A747G02
Removable in OFF Position Only.

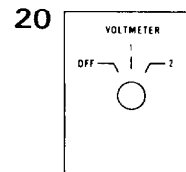
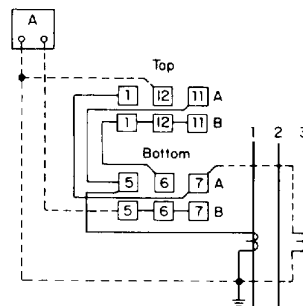
Contacts: Maintained
Stages: 1, Six Contact Frame
Mounting: 1/8-1/4
Target: No



CONTACT	POSITION					
	OFF	1	2	3	4	5
A11-B11	X	X	X	X	X	X
A12-B12	X	X	X	X	X	X
A1-B1	X	X	X	X	X	X
A5-B5	X	X	X	X	X	X
A6-B6				X	X	X
A7-B7						X

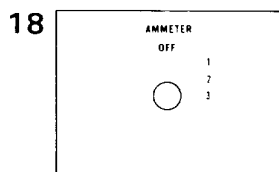
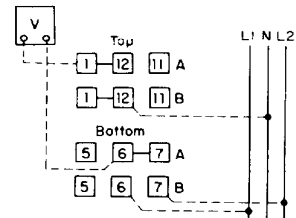
Note:
Switch Mounted 90° From Standard.

Ammeter
3 Phase-2 CT's (End of Circuit)
Style No 787A984G06
Handle: Mini-Slim DS, Fixed
Contacts: Maintained
Stages: 1, Six Contact Frame
Mounting: 1/8-1/4
Target: No



CONTACT	POSITION	
	OFF	1 2
A11-B11	X	X
A12-B12	X	X
A1-B1	X	X
A5-B5	X	X
A6-B6	X	X
A7-B7	X	X

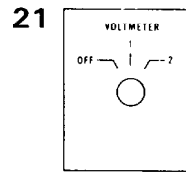
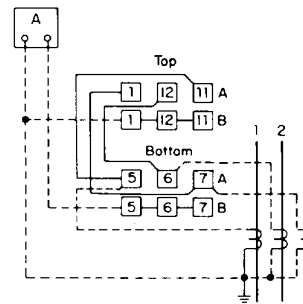
Voltmeter
2 Phase-Ac-3 Wire
Style No. 505A702G01
Handle: Round Fixed
Contacts: Maintained
Stages: 1, Six Contact Frame
Mounting: 1/8-1/4
Target: No



CONTACT	POSITION					
	OFF	1	2	3	4	5
A11-B11	X	X	X	X	X	X
A12-B12	X	X	X	X	X	X
A1-B1	X	X	X	X	X	X
A5-B5		X	X	X	X	X
A6-B6				X	X	X
A7-B7						X

Note:
Switch Mounted 90° From Standard.

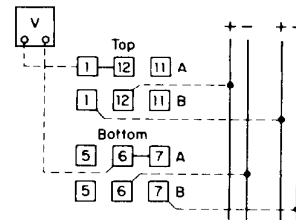
Ammeter
3 Phase-3 CT's (End of Circuit)
Style No 787A984G07
Handle: Mini-Slim DS, Fixed
Contacts: Maintained
Stages: 1, Six Contact Frame
Mounting: 1/8-1/4
Target: No



CONTACT	POSITION	
	OFF	1 2
A11-B11	X	X
A12-B12	X	X
A1-B1	X	X
A5-B5	X	X
A6-B6	X	X
A7-B7	X	X

Voltmeter
2 Circuit-Dc-2 Wire
Style No. 505A702G02
Handle: Round Fixed
(R) Switch Only: S#505A748G01
Removable Handle: S# 505A748G02
Removable in OFF Position Only.

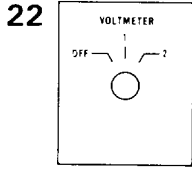
Contacts: Maintained
Stages: 1, Six Contact Frame
Mounting: 1/8-1/4
Target: No



NOTES:

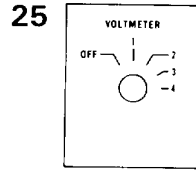
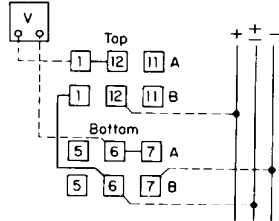
(R) = Switch for Removable Handle
(B) = Basic Switch

Position Tabulations, Continued



Voltmeter
Dc-3 Wire
 Style No. 505A702G03
 Handle: Round Fixed
 Contacts: Maintained
 Stages: 1, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

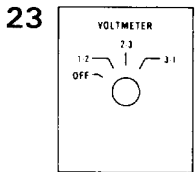
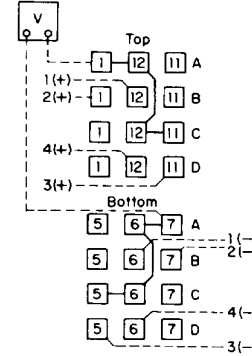
CONTACT	POSITION	
	OFF	1 2
A11-B11	X	
A12-B12		X
A1-B1		X
A5-B5	X	
A6-B6		X
A7-B7		X



Voltmeter
4 Circuit
 Style No. 505A704G01
 Handle: Round Fixed
 Contacts: Maintained
 Stages: 2, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

CONTACT	POSITION			
	OFF	1	2	3 4
A11-B11	X			
A12-B12		X		
A1-B1			X	
A5-B5	X			
A6-B6			X	
A7-B7			X	
C11-D11				X
C12-D12				X
C1-D1				X
C5-D5				X
C6-D6				X
C7-D7				X

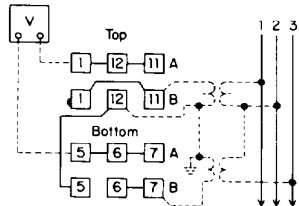
(B) Switch: S#505A604G01



Voltmeter
3 Phase-3 Wire
 Style No. 505A702G04
 Handle: Round Fixed
 (R) Switch Only: S#505A749G01
 Removable, Handle: S# 505A749G02
 Removable in OFF Position Only.

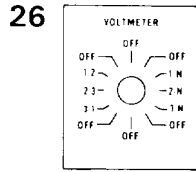
CONTACT	POSITION			
	0	1 2	2 3	3 1
A11-B11		X		
A12-B12			X	
A1-B1				X
A5-B5		X		
A6-B6			X	
A7-B7			X	

Contacts: Maintained
 Stages: 1, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No



Tabulation of Switch as Jumped

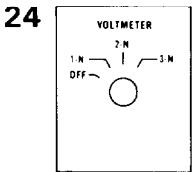
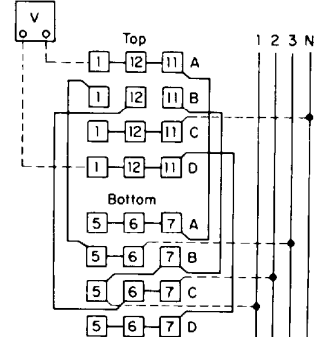
A1-B11		X	X
A1-B12		X	
A5-B5	X		
A5-B7		X	X



Voltmeter
Phase to Neutral and Phase to Phase
 Style No. 505A705G01
 Handle: Round Fixed
 Contacts: Maintained
 Stages: 2, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

CONTACT	POSITION											
	OFF	OFF	OFF	1N	2N	3N	OFF	OFF	OFF	3 1	2 3	1 2
A11-B11				X								
A12-B12					X							
A1-B1						X						
A5-B5							X					
A6-B6								X				
A7-B7									X			
C11-D11										X		
C12-D12											X	
C1-D1												X
C5-D5												X
C6-D6												X
C7-D7												X

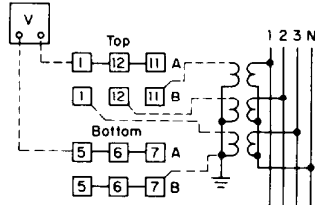
(B) Switch: S#505A605G01



Voltmeter
3 Phase-4 Wire
 Style No. 505A702G05
 Handle: Round Fixed
 (R) Switch Only: S#505A762G01
 Removable Handle: S# 505A762G02
 Removable in OFF Position Only.

CONTACT	POSITION			
	0	1N	2N	3N
A11-B11		X		
A12-B12			X	
A1-B1				X
A5-B5		X		
A6-B6			X	
A7-B7			X	

Contacts: Maintained
 Stages: 1, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No



Tabulation of Switch as Jumped

A1-B11		X	
A1-B12			X
A1-B1			X
A5-B5	X	X	X

NOTES:

- (R) = Switch for Removable Handle
- (B) = Basic Switch

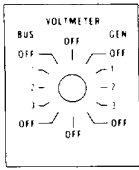


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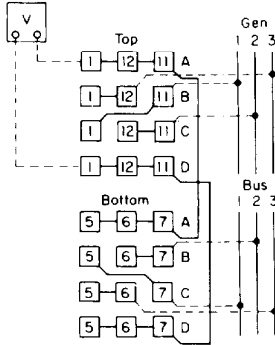
Position Tabulations, Continued

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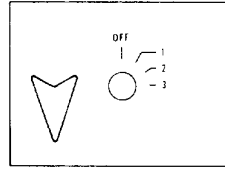


Voltmeter
Two 3 Phase Circuits
Style No. 505A705G02
Handle: Round Fixed
Contacts: Maintained
Stages: 2 Six Contact Frame
Mounting: 1/8-1/4
Target: No

CONTACT	POSITION											
	0	0	0	1	2	3	0	0	0	3	2	1
A11-B11				X								
A12-B12					X							
A1-B1						X						
A5-B5							X					
A6-B6								X				
A7-B7									X			
C11-D11				X								
C12-D12					X							
C1-D1						X						
C5-D5							X					
C6-D6								X				
C7-D7									X			



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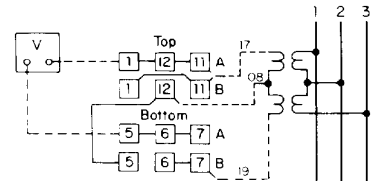


Voltmeter
3 Phase-3 Wire
Style No. 3562A01G01
Handle: Mini-Slim DS. Fixed
Contacts: Maintained
Stages: 1 Six Contact Frame
Mounting: 1/8-1/4
Target: No

CONTACT	POSITION			
	0	1	2	3
A11-B11		X		
A12-B12			X	
A1-B1				X
A5-B5			X	
A6-B6				X
A7-B7				X

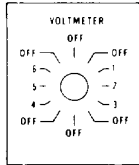
Tabulation of Switch With Extra Connectors Added.

A1-B11		X		X
A1-B12			X	X
A5-B5		X		
A5-B7			X	X



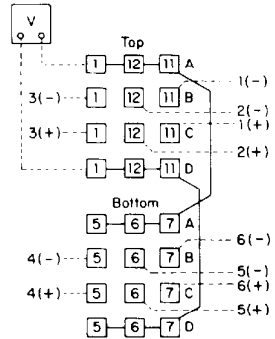
Note:
Switch Mounted 90° From Standard.
Nameplate Arrow Down

28

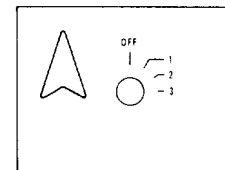


Voltmeter
6 Circuit
Style No. 505A705G03
Handle: Round Fixed
Contacts: Maintained
Stages: 2 Six Contact Frame
Mounting: 1/8-1/4
Target: No

CONTACT	POSITION											
	0	0	0	1	2	3	0	0	0	4	5	6
A11-B11				X								
A12-B12					X							
A1-B1						X						
A5-B5							X					
A6-B6								X				
A7-B7									X			
C11-D11				X								
C12-D12					X							
C1-D1						X						
C5-D5							X					
C6-D6								X				
C7-D7									X			



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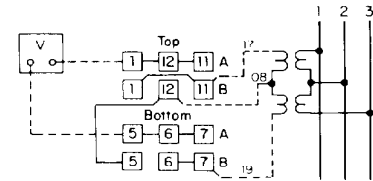


Voltmeter
3 Phase-3 Wire
Style No. 3562A01G02
Handle: Mini-Slim DS. Fixed
Contacts: Maintained
Stages: 1 Six Contact Frame
Mounting: 1/8-1/4
Target: No

CONTACT	POSITION			
	0	1	2	3
A11-B11		X		
A12-B12			X	
A1-B1				X
A5-B5			X	
A6-B6				X
A7-B7				X

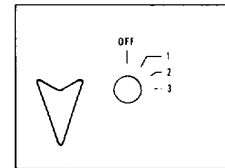
Tabulation of Switch With Extra Connectors Added.

A1-B11		X		X
A1-B12			X	X
A5-B5		X		
A5-B7			X	X



Note:
Switch Mounted 90° From Standard.
Nameplate Arrow Up

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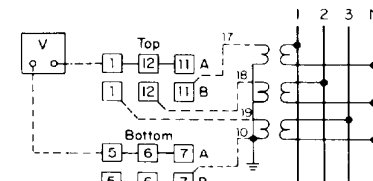


Voltmeter
3 Phase-4 Wire
Style No. 3562A01G03
Handle: Mini-Slim DS. Fixed
Contacts: Maintained
Stages: 1 Six Contact Frame
Mounting: 1/8-1/4
Target: No

CONTACT	POSITION			
	0	1	2	3
A11-B11		X		
A12-B12			X	
A1-B1				X
A5-B5			X	
A6-B6				X
A7-B7				X

Tabulation of Switch With Extra Connectors Added.

A1-B11		X		
A1-B12			X	
A1-B1				X
A5-B5		X	X	X



Note:
Switch Mounted 90° From Standard.
Nameplate Arrow Down.

NOTES:

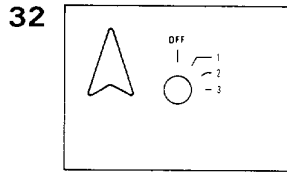
- (R) = Switch for Removable Handle
- (B) = Basic Switch



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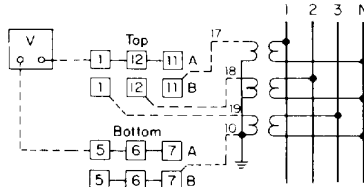
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Position Tabulations, *Continued*



Voltmeter
 3 Phase-4 Wire
 Style No. 3562A01G04
 Handle: Mini-Slim DS. Fixed
 Contacts: Maintained
 Stages: 1 Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

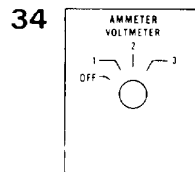
CONTACT	POSITION			
	0	1	2	3
A11-B11		X		
A12-B12			X	
A1-B1				X
A5-B5	X			
A6-B6		X		
A7-B7			X	



Tabulation of Switch With Extra Connectors Added.

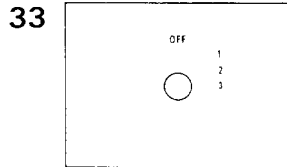
A1-B11		X		
A1-B12			X	
A1-B1				X
A5-B5	X	X	X	

Note:
 Switch Mounted 90° From Standard.
 Nameplate Arrow Up.



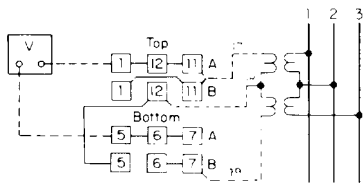
Ammeter/Voltmeter
 3 Phase - 3 Wire - 3 CT's - 3 PT's
 Style No. 508A299G03
 Handle: Round Fixed
 Contacts: Maintained
 Stages: 3. Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

CONTACT	POSITION					
	0	1	2	3	4	5
A11-B11		X	X			
A12-B12			X	X	X	
A1-B1					X	X
A5-B5	X	X	X			
A6-B6			X	X	X	
A7-B7					X	X
C11-D11	X	X	X	X	X	X
C12-D12	X	X	X	X	X	X
C1-D1	X	X	X	X	X	X
C5-D5	X	X	X	X	X	X
C6-D6	X	X	X	X	X	X
C7-D7	X	X	X	X	X	X
E11-F11		X				
E12-F12			X			
E1-F1						X
E5-F5		X				
E6-F6			X			
E7-F7				X		X



Voltmeter
 3 Phase-3 Wire
 Style No. 3562A01G05
 Handle: Mini-Slim DS. Fixed
 Contacts: Maintained
 Stages: 1 Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

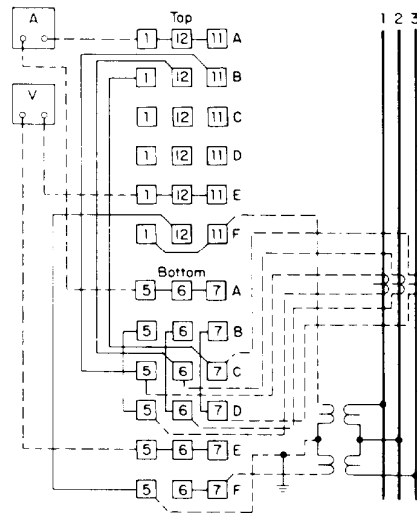
CONTACT	POSITION			
	0	1	2	3
A11-B11		X		
A12-B12			X	
A1-B1				X
A5-B5	X			
A6-B6		X		
A7-B7			X	



Tabulation of Switch With Extra Connectors Added.

A1-B11		X	X	
A1-B12			X	
A5-B5	X			
A5-B7		X	X	

Note:
 Switch Mounted 90° From Standard

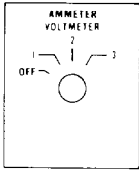


NOTES:

- (R) = Switch for Removable Handle
- (B) = Basic Switch

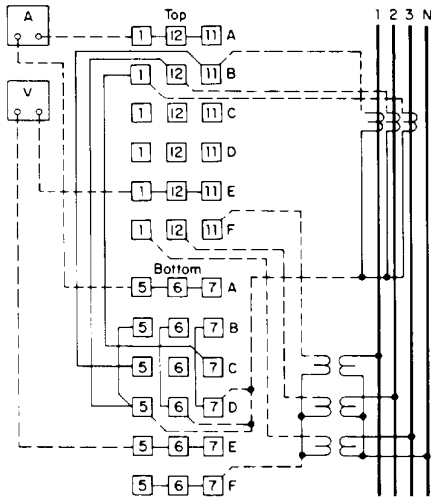
Position Tabulations, *Continued*

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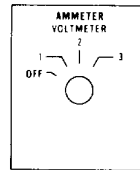


Ammeter/Voltmeter
 3 Phase - 4 Wire - 3CT's - 3PT's
 Style No. 508A299G09
 Handle: Round Fixed
 Contacts: Maintained
 Stages: 3. Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

CONTACT	POSITION					
	0	1	2	3	4	5
A11-B11	X	X	X			
A12-B12			X	X	X	
A1-B1					X	X
A5-B5	X	X	X			
A6-B6			X	X	X	
A7-B7						X
C11-D11	X	X	X	X	X	X
C12-D12	X	X	X	X	X	X
C1-D1	X	X	X	X	X	X
C5-D5	X	X	X	X	X	X
C6-D6	X	X	X	X	X	X
C7-D7	X	X	X	X	X	X
E11-F11		X				
E12-F12				X		
E1-F1						X
E5-F5		X				
E6-F6				X		
E7-F7						X

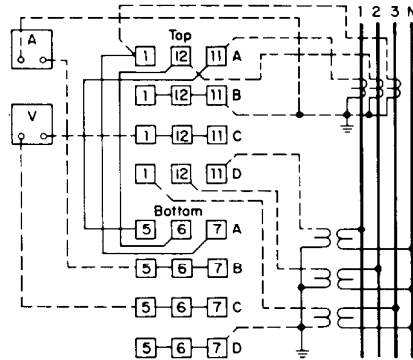


36



Ammeter/Voltmeter
 3 Phase-4 Wire-3 CT's and 3 PT's
 (End of Line Application)
 Style No. 787A977G01
 Handle: Round Fixed
 Contacts: Maintained
 Stages: 2. Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

CONTACT	POSITION					
	OFF	1	2	3	4	5
A11-B11	X	X	X	X	X	X
A12-B12	X	X	X	X	X	X
A1-B1	X	X	X	X	X	X
A5-B5		X	X	X		
A6-B6				X	X	X
A7-B7						X
C11-D11		X				X
C12-D12				X		
C1-D1						X
C5-D5		X				
C6-D6				X		
C7-D7						X



NOTES:

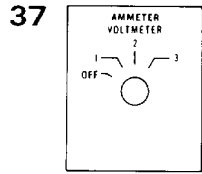
- (R) = Switch for Removable Handle
- (B) = Basic Switch



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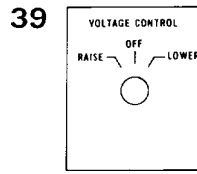
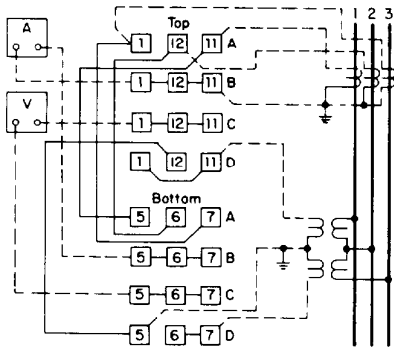
Position Tabulations, *Continued*



Ammeter/Voltmeter
 3 Phase - 3 Wire - 3CT's - 3PT's
 (End of Line Application)

Style No. 787A977G02
 Handle: Round Fixed
 Contacts: Maintained
 Stages: 2. Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

CONTACT	POSITION					
	OFF	1	2	3	4	5
A11-B11	X	X	X	X	X	X
A12-B12	X	X	X	X	X	X
A1-B1	X	X	X	X	X	X
A5-B5	X	X	X			
A6-B6			X	X	X	
A7-B7					X	X
C11-D11		X				X
C12-D12				X		
C1-D1						X
C5-D5		X				
C6-D6				X		
C7-D7						X

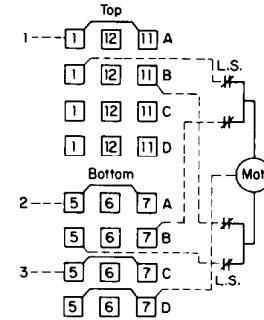


Voltage Control

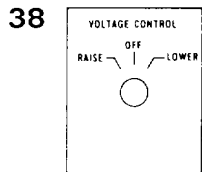
Style No. 505A715G01
 Handle: Pistol Grip Fixed
 Contacts: Momentary
 Stages: 2. Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

Oval Fixed Handle
 Switch S#505A715G05

CONTACT	POSITION		
	R	O	L
A11-B11	X		
A12-B12	X	X	
A1-B1			X
A5-B5	X		
A6-B6		X	
A7-B7			X
C11-D11	X		
C12-D12		X	
C1-D1			X
C5-D5	X		
C6-D6		X	
C7-D7			X



Note:
 Spring Return to OFF Position.



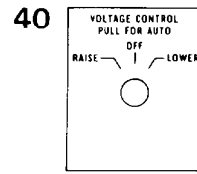
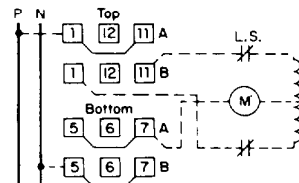
Voltage Control

Style No. 505A703G01
 Handle: Pistol Grip Fixed
 Contacts: Momentary
 Stages: 1. Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

Oval Fixed Handle
 Switch: S#505A703G06

CONTACT	POSITION		
	R	O	L
A11-B11	X		
A12-B12	X	X	
A1-B1			X
A5-B5	X		
A6-B6		X	
A7-B7			X

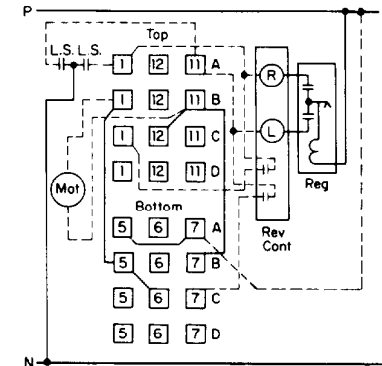
Note:
 Spring Return to OFF Position.



Voltage Control

Style No. 505A716G01
 Handle: Oval Fixed
 Contacts: Momentary
 Stages: 2. Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

CONTACT	POSITION			
	R	O	P	L
A11-B11	X			
A12-B12	X	X		
A1-B1				X
A5-B5	X			
A6-B6		X	X	
A7-B7				X
C12-C1		X	X	
D12-D1	X	X	X	
C6-C7			X	
D6-D7	X	X	X	

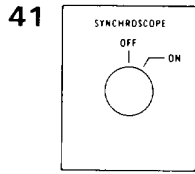


Note:
 Spring Return to OFF Position.
 Maintained In Pull Out at OFF

NOTES:

- (R) = Switch for Removable Handle
- (B) = Basic Switch

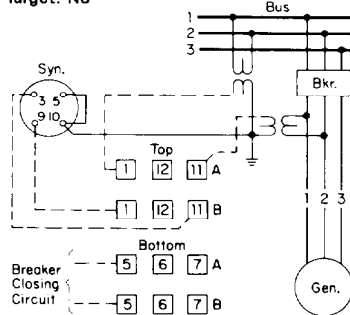
Position Tabulations, *Continued*



**Synchroscope
Machine to Bus**

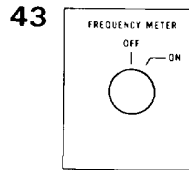
(R) Style No. 505A755G01
Handle: Removable
Contacts: Maintained
Stages: 1. Six Contact Frame
Mounting: 1/8-1/4
Target: No

CONTACT	POSITION	
	OFF	ON
A11-B11		X
A12-B12	X	
A1-B1		X
A5-B5		X
A6-B6	X	
A7-B7		X



(B) Switch: S#505A655G01

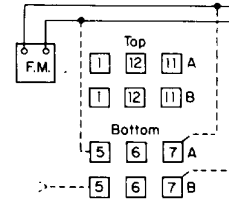
Note:
Handle Removable in OFF Position
Handle Not Furnished as Part of Switch
Ref to Handle S# 505A755G02 (Round)



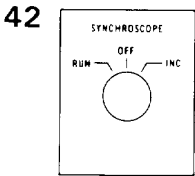
Frequency Meter

(R) Style No. 508A467G01
Handle: Removable
Contacts: Maintained
Stages: 1. Six Contact Frame
Mounting: 1/8-1/4
Target: No

CONTACT	POSITION	
	OFF	ON
A11-B11		X
A12-B12	X	
A1-B1		X
A5-B5		X
A6-B6	X	
A7-B7		X



Note:
Handle Removable in OFF Position
Ref to Handle S#508A467G02 (Round)
Ref to Handle S#508A467G03 (Oval)



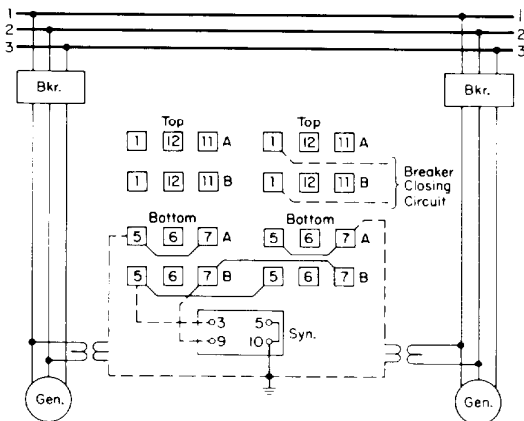
**Synchroscope
Between Machines**

(R) Style No. 505A757G01
Handle: Removable
Contacts: Maintained
Stages: 1. Six Contact Frame
Mounting: 1/8-1/4
Target: No

CONTACT	POSITION		
	R	O	I
A11-B11	X		
A12-B12		X	
A1-B1			X
A5-B5	X		
A6-B6		X	
A7-B7			X

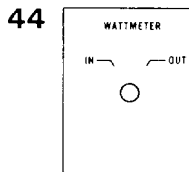
NOTE:
Operated By Two Removable Handles
Not Furnished As Part of Switch.
Ref to RUN Handle S#505A757G02
Ref to INC handle S#505A757G03

Both Handles Removable in OFF Position.



NOTES:

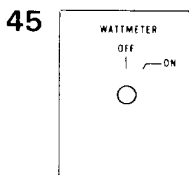
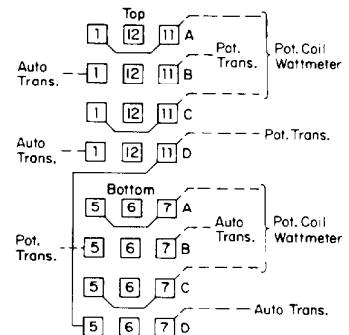
(R) = Switch for Removable Handle
(B) = Basic Switch



Wattmeter

Style No. 505A712G90
Handle: Round Fixed
Contacts: Maintained
Stages: 2 Six Contact Frame
Mounting: 1/8-1/4
Target No.

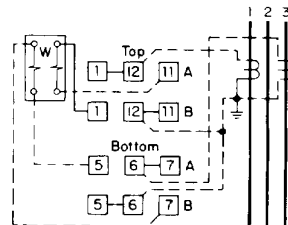
CONTACT	POSITION		
	IN	-	OUT
A11-B11	X		
A12-B12		X	
A1-B1			X
A5-B5	X		
A6-B6		X	
A7-B7			X
C11-D11	X		
C12-D12		X	
C1-D1			X
C5-D5	X		
C6-D6		X	
C7-D7			X



Wattmeter

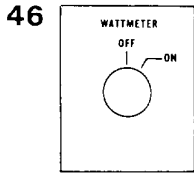
Style No. 505A734G09
Handle: Round Fixed
Contacts: Maintained
Stages: 1. Six Contact Frame
Mounting: 1/8-1/4
Target: No

CONTACT	POSITION	
	OFF	ON
A11-B11	X	X
A12-B12	X	X
A1-B1	X	X
A5-B5	X	X
A6-B6	X	X
A7-B7	X	X



* Note:
Adjacent Overlap
Contacts are Electrically
Connected Together
During Transfer

Position Tabulations, *Continued*

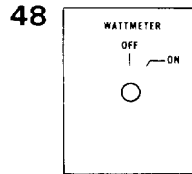
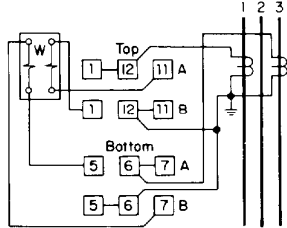


Wattmeter
 (R) Style No. 505A754G04
 Handle: Removable
 Contacts: Maintained
 Stages: 1, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

Note:
 Handle Removable in OFF Position
 Handle Not Furnished as Part of Switch.
 Ref. to Handle S#505A797G02 (Oval)

CONTACT	POSITION	
	OFF	ON
A11-B11	X	X
A12-B12	X	X
A1-B1	X	X
A5-B5	X	X
A6-B6	X	X
A7-B7	X	X

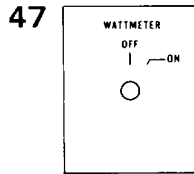
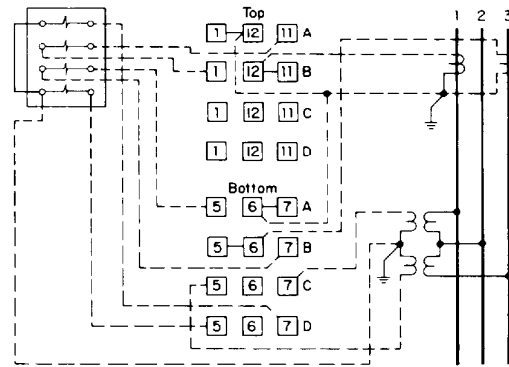
* **Note:**
 Adjacent Overlap Contacts
 are Electrically Connected
 Together During Transfer.



Wattmeter
 Style No. 505A740G07
 Handle: Round Fixed
 Contacts: Maintained
 Stages: 2, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

CONTACT	POSITION	
	OFF	ON
A11-B11	X	X
A12-B12	X	X
A1-B1	X	X
A5-B5	X	X
A6-B6	X	X
A7-B7	X	X
C11-D11	X	X
C12-D12	X	X
C1-D1	X	X
C5-D5	X	X
C6-D6	X	X
C7-D7	X	X

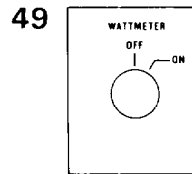
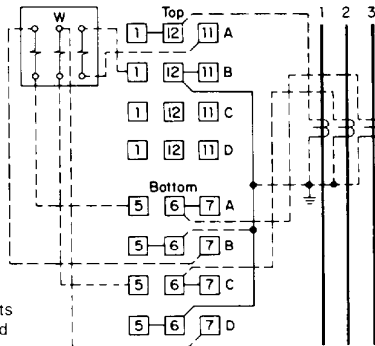
Note:
 Adjacent Overlap Contacts
 are Electrically Connected
 Together During Transfer.



Wattmeter
 Style No. 505A740G06
 Handle: Round Fixed
 Contacts: Maintained
 Stages: 2, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

CONTACT	POSITION	
	OFF	ON
A11-B11	X	X
A12-B12	X	X
A1-B1	X	X
A5-B5	X	X
A6-B6	X	X
A7-B7	X	X
C11-D11	X	X
C12-D12	X	X
C1-D1	X	X
C5-D5	X	X
C6-D6	X	X
C7-D7	X	X

* **Note:**
 Adjacent Overlap Contacts
 are Electrically Connected
 Together During Transfer.

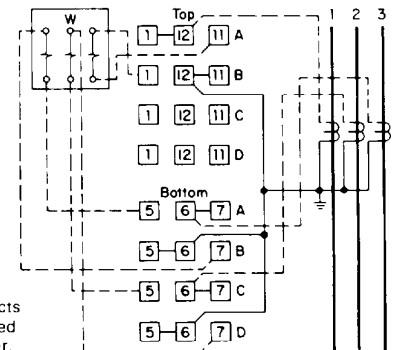


Wattmeter
 (R) Style No. 505A779G05
 Handle: Removable
 Contacts: Maintained
 Stages: 2, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

Note:
 Handle Removable in OFF Position.
 Handle Not Furnished as Part of Switch.
 Ref. to Handle S#508A247G02 (Round)

CONTACT	POSITION	
	OFF	ON
A11-B11	X	X
A12-B12	X	X
A1-B1	X	X
A5-B5	X	X
A6-B6	X	X
A7-B7	X	X
C11-D11	X	X
C12-D12	X	X
C1-D1	X	X
C5-D5	X	X
C6-D6	X	X
C7-D7	X	X

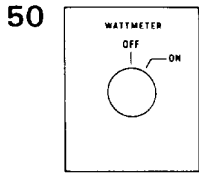
* **Note:**
 Adjacent Overlap Contacts
 are Electrically Connected
 Together During Transfer.



NOTES:

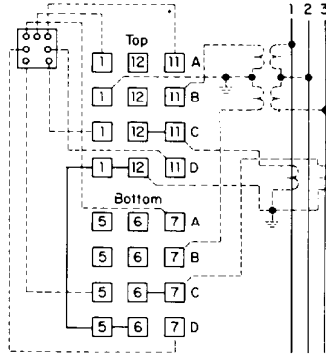
(R) = Switch for Removable Handle
 (B) = Basic Switch

Position Tabulations, *Continued*



Wattmeter
 (R) Style No. 505A752G01
 Handle: Removable
 Contacts: Maintained
 Stages: 2, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

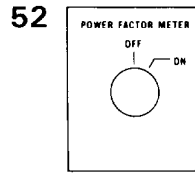
CONTACT	POSITION	
	OFF	ON
A11-B11		X
A12-B12	X	X
A1-B1		X
A5-B5		X
A6-B6	X	X
A7-B7		X
C11-D11	X	X
C12-D12	X	X
C1-D1	X	X
C5-D5	X	X
C6-D6	X	X
C7-D7	X	X



(B) Switch: S#505A652G01

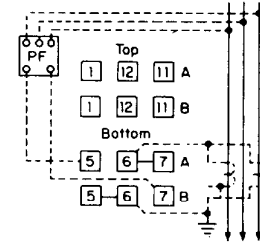
Note:
 Ref. to Removable Handle S#505A752G02 (Round)
 Removable in OFF Position Only

***Note:**
 Adjacent Overlap Contacts are Electrically Connected During Transfer.

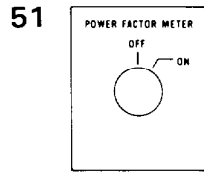


Power Factor Meter
Current Transfer Only
 (R) Style No. 505A754G01
 Handle: Removable
 Contacts: Maintained
 Stages: 1, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

CONTACT	POSITION	
	OFF	ON
A11-B11	X	X
A12-B12	X	X
A1-B1	X	X
A5-B5	X	X
A6-B6	X	X
A7-B7	X	X

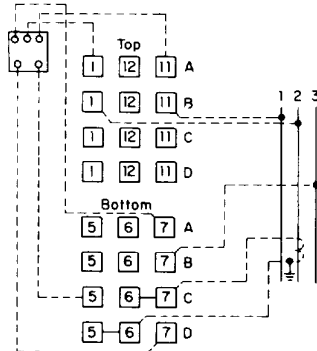


Note:
 Ref. to Removable Handle S#505A754G02 (Round)
 Removable in OFF Position Only.



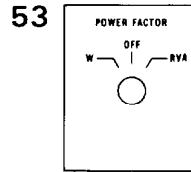
Power Factor Meter
 (R) Style No. 505A753G01
 Handle: Removable
 Contacts: Maintained
 Stages: 2, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

CONTACT	POSITION	
	OFF	ON
A11-B11		X
A12-B12	X	X
A1-B1		X
A5-B5		X
A6-B6	X	X
A7-B7		X
C11-D11	X	X
C12-D12	X	X
C1-D1	X	X
C5-D5	X	X
C6-D6	X	X
C7-D7	X	X



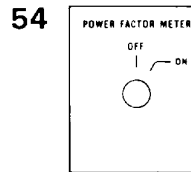
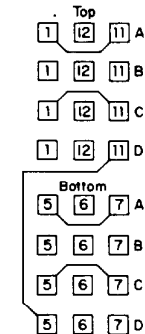
(B) Switch: S#505A653G01

Note:
 Ref. to Removable Handle S#505A753G02 (Round)
 Removable in OFF Position Only.



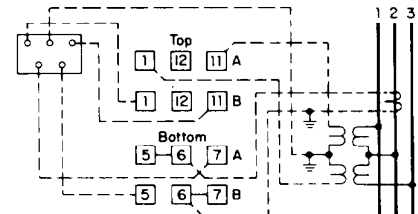
Power Factor
 Style No. 505A712G91
 Handle: Round Fixed
 Contacts: Maintained
 Stages: 2, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

CONTACT	POSITION		
	W	O	RYA
A11-B11	X		
A12-B12		X	
A1-B1			X
A5-B5	X		
A6-B6		X	
A7-B7			X
C11-D11	X		
C12-D12		X	
C1-D1			X
C5-D5	X		
C6-D6		X	
C7-D7			X



Power Factor Meter
 Style No. 508A496G03
 Handle: Round Fixed
 Contacts: Maintained
 Stages: 1, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

CONTACT	POSITION	
	OFF	ON
A11-B11		X
A12-B12	X	X
A1-B1		X
A5-B5	X	X
A6-B6	X	X
A7-B7	X	X



*** Note:**
 Adjacent Overlap Contacts are Electrically Connected Together During Transfer

NOTES:

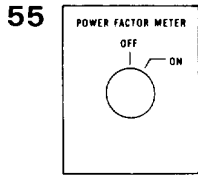
(R) = Switch for Removable Handle
 (B) = Basic Switch



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Position Tabulations, *Continued*

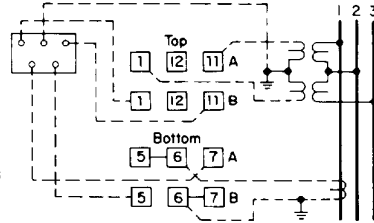


Power Factor Meter

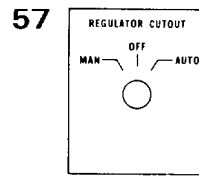
(R) Style No. 802A470G01
 Handle: Removable
 Contacts: Maintained
 Stages: 1, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

Note:
 Handle Removable in OFF Position.
 Handle Not Furnished as Part of Switch
 Ref. to Handle S#505A754G03 (Oval)

CONTACT	POSITION	
	OFF	ON
A11-B11		X
A12-B12	X	
A1-B1		X
A5-B5	X	X
A6-B6	X	X
A7-B7	X	X



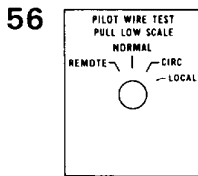
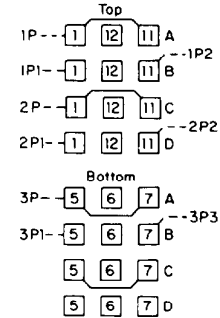
* **Note:**
 Adjacent Overlap Contacts
 are Electrically Connected
 Together During Transfer.



Regulator Cutout

Style No. 505A712G01
 Handle: Round Fixed
 Contacts: Maintained
 Stages: 2, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

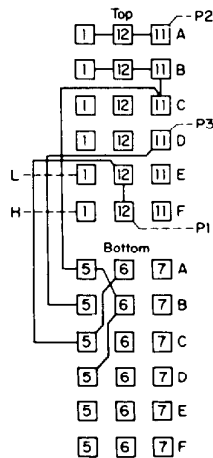
CONTACT	POSITION		
	M	O	A
A11-B11	X		
A12-B12	X		
A1-B1		X	
A5-B5	X	X	
A6-B6	X	X	
A7-B7	X	X	
C11-D11	X	X	
C12-D12	X	X	
C1-D1		X	
C5-D5	X	X	
C6-D6	X	X	
C7-D7	X	X	



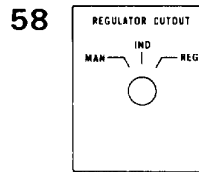
Pilot Wire Test

Style No. 508A468G01
 Handle: Pistol Grip Fixed
 Contacts: Momentary
 Stages: 3, Six Contact Frame
 Mounting: 1/8-1/4
 Target: Yes

CONTACT	POSITION					
	R	P	N	C	L	P
A11-B11	X	X	X	X	X	X
A6-B6			X			X
A7-B7			X			X
C11-D11	X	X		X	X	X
E12-E1	X	X		X	X	X
F12-F1	X	X		X	X	X
E6-E7	X	X		X	X	X
F6-F7	X	X		X	X	X



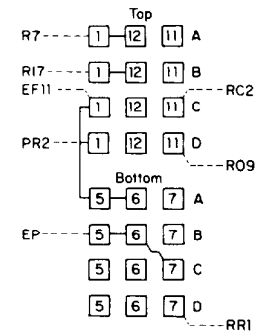
(B) Switch: S#508A368G01



Regulator Cutout

Style No. 508A224G02
 Handle: Round Fixed
 Contacts: Maintained
 Stages: 2, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

CONTACT	POSITION		
	M	I	R
A11-B11	X	X	X
A12-B12	X	X	X
A1-B1		X	X
A5-B5	X	X	X
A6-B6	X	X	X
A7-B7	X	X	X
C11-D11	X	X	X
C12-D12	X	X	X
C1-D1		X	X
C5-D5	X	X	X
C6-D6	X	X	X
C7-D7	X	X	X



* **Note:**
 Adjacent Overlap Contacts
 are Electrically Connected
 Together During Transfer.

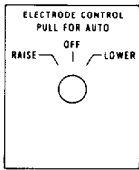
Note: Spring Return to Normal. Pull out at each Position with Spring from Pull Out.

NOTES:

- R) = Switch for Removable Handle
-) = Basic Switch

Position Tabulations, *Continued*

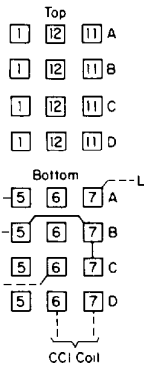
59



CONTACT	POSITION			
	R	O	P	L
A11-B11	X			
A12-B12		X	X	
A1-B1				X
A5-B5	X			
A6-B6		X	X	
A7-B7				X
C12-C1			X	
D12-D1	X	X		X
C6-C7			X	
D6-D7	X	X		X

Electrode Control

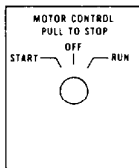
Switch S#505A716G02 (Oval Fixed Handle)
 Switch S#505A716G04 (Pistol Grip Fixed Handle)
 Contacts: Momentary
 Stages: 2, Six Contact Frame
 Mounting: 1 8-1 4
 Target: No



(B) Switch: S#505A616G01

Note:
 Maintained in Pull Out at OFF

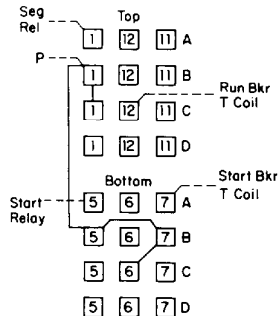
60



CONTACT	POSITION			
	S	O	P	R
A11-B11	X			
A12-B12		X	X	
A1-B1				X
A5-B5	X			
A6-B6		X	X	
A7-B7				X
C12-C1			X	
D12-D1	X	X		X
C6-C7			X	
D6-D7	X	X		X

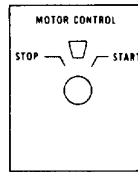
Motor Control

Switch S#505A716G03 (Oval Fixed Handle)
 Switch S#505A716G05 (Pistol Grip Fixed Handle)
 Contacts: Momentary
 Stages: 2, Six Contact Frame
 Mounting: 1 8-1 4
 Target: No



Note:
 Spring Return to OFF Position.
 Maintained in Pull Out at OFF Position.

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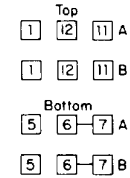


CONTACT	POSITION			
	STOP	N	SR	SR
A11-B11	X			
A12-B12		X		
A1-B1				X
A5-B5	X	X		
A6-B6		X	X	
A7-B7			X	X

* Note:
 Adjacent Overlap Contacts are Electrically Connected Together During Transfer.

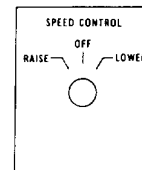
Motor Control

Style No. 663A245G06
 Handle: Pistol Grip Fixed
 Contacts: Momentary
 Stages: 1, Six Contact Frame
 Mounting: 1 8-1 4
 Target: Yes



Note:
 Spring Return to Center (N) Position.

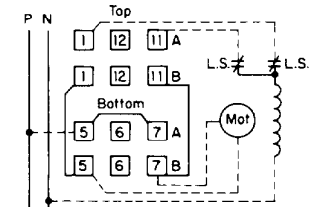
62



CONTACT	POSITION			
	R	O	L	L
A11-B11	X			
A12-B12		X		
A1-B1				X
A5-B5	X			
A6-B6		X		
A7-B7			X	

Speed Control

Switch S#505A703G02 (Pistol Grip Fixed Handle)
 Switch S#505A703G07 (Oval Fixed Handle)
 Contacts: Momentary
 Stages: 1, Six Contact Frame
 Mounting: 1 8-1 4
 Target: No



NOTES:

(R) = Switch for Removable Handle
 (B) = Basic Switch

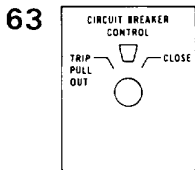
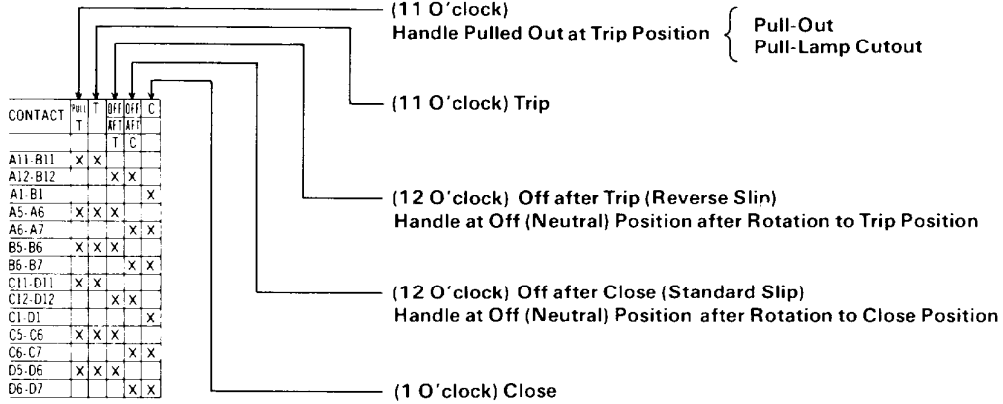


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Position Tabulations, *Continued*

Interpretation of position designations for Figures 63 through 83 and other switches using slip and/or pull contacts.

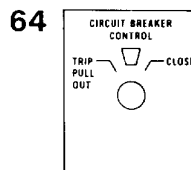
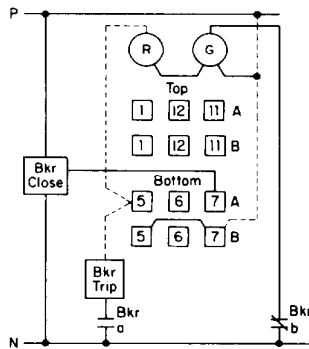


CONTACT	POSITION			
	P	T	O	C
A11-B11	X	X		
A12-B12		X	X	
A1-B1				X
A5-B5	X	X	X	
A6-B6		X	X	X
A7-B7				X

(B) Switch: S#505A613G01

Circuit Breaker Control

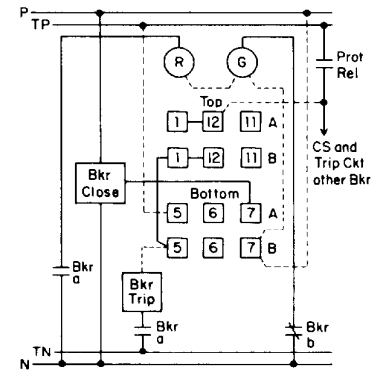
Switch S#505A713G01 (Pistol Grip Fixed Handle)
 Switch S#505A713G03 (Oval Fixed Handle)
 Contacts: Momentary
 Stages: 1, Six Contact Frame
 Mounting: 1-8-1-4
 Target: Yes



CONTACT	POSITION			
	P	T	O	C
A11-B11	X	X		
A12-B12		X	X	
A1-B1				X
A5-B5	X	X	X	
A6-B6		X	X	X
A7-B7				X

Circuit Breaker Control

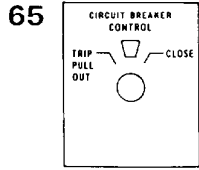
Style No. 505A713G02
 Handle: Pistol Grip Fixed
 Contacts: Momentary
 Stages: 1, Six Contact Frame
 Mounting: 1-8-1-4
 Target: Yes



NOTES:

- (R) = Switch for Removable Handle
- (B) = Basic Switch

Position Tabulations, *Continued*

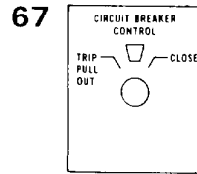
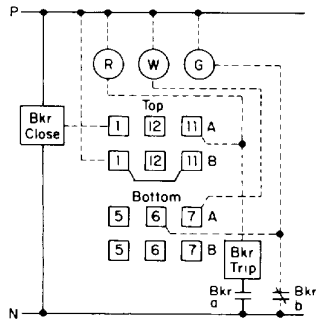


CONTACT	POSITION				
	P	T	OFF	TRIP	C
A11-B11	X	X			
A12-B12			X	X	
A1-B1					X
A5-A6	X	X	X	X	
A6-A7			X	X	
B5-B6	X	X	X	X	
B6-B7			X	X	

(B) Switch: S#505A614G01

Circuit Breaker Control

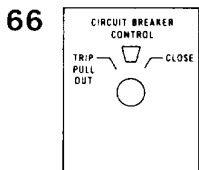
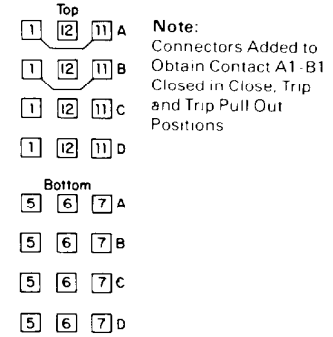
Switch S#505A714G01
(Pistol Grip Fixed Handle)
Switch S#505A714G02
(Oval Fixed Handle)
Contacts: Momentary
Stages: 1. Six Contact Frame
Mounting: 1-8-1-4
Target: Yes



CONTACT	POSITION				
	P	T	OFF	TRIP	C
A11-B11	X	X			
A12-B12			X	X	
A1-B1					X
A5-B5	X	X	X	X	
A6-B6			X	X	
A7-B7					X
C11-D11	X	X			
C12-D12			X	X	
C1-D1					X
C5-C6	X	X	X	X	
C6-C7			X	X	
D5-D6	X	X	X	X	
D6-D7			X	X	

Circuit Breaker Control

Style No. 505A718G15
Handle: Pistol Grip Fixed
Contacts: Momentary
Stages: 2. Six Contact Frame
Mounting: 1-8-1-4
Target: Yes

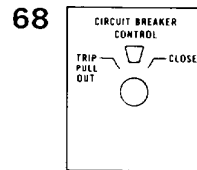
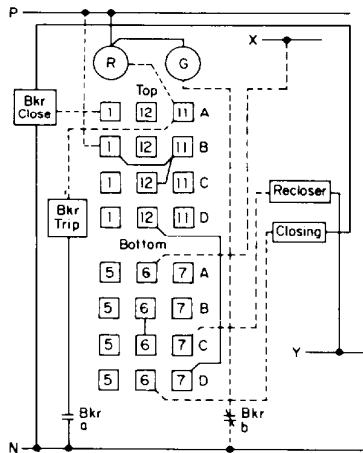


CONTACT	POSITION				
	P	T	OFF	TRIP	C
A11-B11	X	X			
A12-B12			X	X	
A1-B1					X
A5-B5	X	X	X	X	
A6-B6			X	X	
A7-B7					X
C11-D11	X	X			
C12-D12			X	X	
C1-D1					X
C5-C6	X	X	X	X	
C6-C7			X	X	
D5-D6	X	X	X	X	
D6-D7			X	X	

(B) Switch: S#505A618G01

Circuit Breaker Control

Style No. 505A718G01
Handle: Pistol Grip Fixed
Contacts: Momentary
Stages: 2. Six Contact Frame
Mounting: 1-8-1-4
Target: Yes

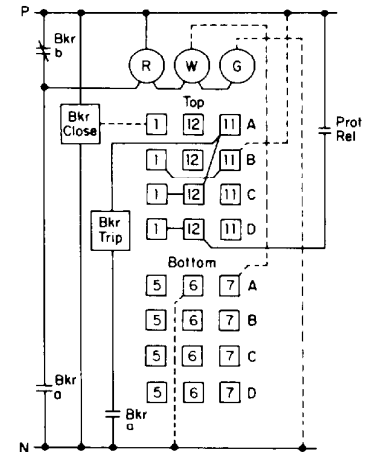


CONTACT	POSITION				
	P	T	OFF	TRIP	C
A11-B11	X	X			
A12-B12			X	X	
A1-B1					X
A5-A6	X	X	X	X	
A6-A7			X	X	
B5-B5	X	X	X	X	
B6-B7			X	X	
C11-D11	X	X			
C12-D12			X	X	
C1-D1					X
C5-C6	X	X	X	X	
C6-C7			X	X	
D5-D6	X	X	X	X	
D6-D7			X	X	

(B) Switch: S#505A617G01

Circuit Breaker Control

Switch S#505A717G02
(Pistol Grip Fixed Handle)
Switch S#505A717G03
(Oval Fixed Handle and No Connectors)
Contacts: Momentary
Stages: 2. Six Contact Frame
Mounting: 1-8-1-4
Target: Yes

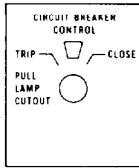


NOTES:

- (R) = Switch for Removable Handle
- (B) = Basic Switch

Position Tabulations, *Continued*

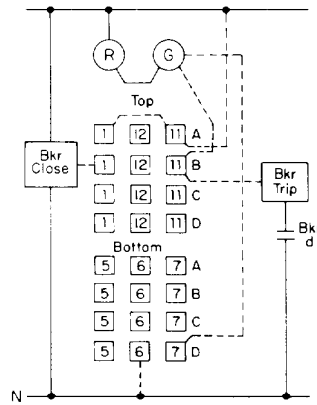
69



CONTACT	POSITION			
	P	T	OFF	MT
A11-B11	X	X		
A12-B12			X	X
A1-B1				X
A5-B5	X	X		
A6-B6			X	X
A7-B7				X
C12-D12	X	X		
D12-D1	X	X	X	X
C6-C7	X			
D6-D7	X	X	X	X

Circuit Breaker Control

Switch S#505A720G01
(Pistol Grip Fixed Handle)
Switch S#505A720G03
(Oval Fixed Handle)
Contacts: Momentary
Stages: 2, Six Contact Frame
Mounting: 1/8-1/4
Target: Yes
No Connectors Furnished

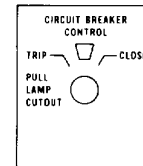


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CONTACT	POSITION			
	P	T	OFF	MT
A11-B11	X	X		
A12-B12			X	X
A1-B1				X
A5-B5	X	X		
A6-B6			X	X
A7-B7				X
C11-D11	X	X		
C12-D12	X	X	X	X
C1-D1				X
C5-C6	X	X	X	X
C6-C7			X	X
D5-D6	X	X	X	X
D6-D7			X	X
E12-E1	X	X	X	X
F12-F1	X	X	X	X
E6-E7	X			
F6-F7	X	X	X	X

Circuit Breaker Control

Switch S#508A264G02
(Pistol Grip Fixed Handle)
Switch S#508A264G01
(Oval Fixed Handle)
Contacts: Momentary
Stages: 3, Six Contact Frame
Mounting: 1/8-1/4
Target: Yes

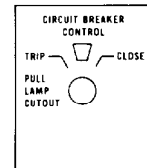


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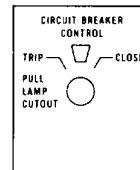
CONTACT	POSITION			
	P	T	OFF	MT
A11-B11	X	X		
A12-B12			X	X
A1-B1				X
A5-A6	X	X	X	X
A6-A7			X	X
B5-B6	X	X	X	X
B6-B7			X	X
C12-C1	X			
D12-D1	X	X	X	X
C6-C7	X			
D6-D7	X	X	X	X

Circuit Breaker Control

Switch S#508A244G01
(Pistol Grip Fixed Handle)
Switch S#508A244G02
(Oval Fixed Handle)
Contacts: Momentary
Stages: 2, Six Contact Frame
Mounting: 1/8-1/4
Target: Yes



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Circuit Breaker Control

Style No. 508A281G02
Handle: Pistol Grip Fixed
Contacts: Momentary
Stages: 4, Six Contact Frame
Mounting: 1/8-1/4
Target: Yes

CONTACT	POSITION			
	PULL	T	OFF	MT
A11-B11	X	X		
A12-B12			X	X
A1-B1				X
A5-B5	X	X		
A6-B6			X	X
A7-B7				X
C11-D11	X	X		
C12-D12			X	X
C1-D1				X
C5-C6	X	X	X	X
C6-C7			X	X
D5-D6	X	X	X	X
D6-D7			X	X
E11-F11	X	X		
E12-F12			X	X
E1-F1				X
E5-E6	X	X	X	X
E6-E7			X	X
F5-F6	X	X	X	X
F6-F7			X	X
G12-G1	X			
H12-H1	X	X	X	X
G6-G7	X			
H6-H7	X	X	X	X

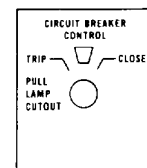
- Top
- 1 2 11 A
- 1 12 11 B
- 1 2 11 C
- 1 2 11 D
- 1 2 11 E
- 1 2 11 F
- 1 2 11 G
- 1 2 11 H
- Bottom
- 5 6 7 A
- 5 6 7 B
- 5 6 7 C
- 5 6 7 D
- 5 6 7 E
- 5 6 7 F
- 5 6 7 G
- 5 6 7 H

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CONTACT	POSITION			
	P	T	OFF	MT
A11-B11	X	X		
A12-B12			X	X
A1-B1				X
A5-A6	X	X	X	X
A6-A7			X	X
B5-B6	X	X	X	X
B6-B7			X	X
C11-D11	X	X		
C12-D12	X	X		
C1-D1				X
C5-C6	X	X	X	X
C6-C7			X	X
D5-D6	X	X	X	X
D6-D7			X	X
E12-E1	X	X	X	X
F12-F1	X	X	X	X
E6-E7	X			
F6-F7	X	X	X	X

Circuit Breaker Control

Switch S#508A262G01
(Pistol Grip Fixed Handle)
Switch S#508A262G03
(Oval Fixed Handle)
Contacts: Momentary
Stages: 3, Six Contact Frame
Mounting: 1/8-1/4
Target: Yes



NOTES:

(R) = Switch for Removable Handle
(B) = Basic Switch



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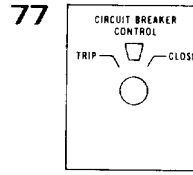
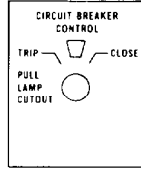
Position Tabulations, *Continued*

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CONTACT	POSITION					
	PULL	T	N	N	C	C
	T	NT	NT	T	C	C
A11-B11	X	X				
A12-B12			X	X		
A1-B1					X	X
A5-A6	X	X	X			
A6-A7				X	X	
B5-B6	X	X	X			
B6-B7				X	X	
C11-D11	X	X				
C12-D12			X	X		
C1-D1					X	X
C5-C6	X	X	X			
C6-C7				X	X	
D5-D6	X	X	X			
D6-D7				X	X	
E11-F11	X	X				
E12-F12			X	X		
E1-F1					X	X
E5-E6	X	X	X			
F6-F7				X	X	
F5-F6	X	X	X			
F6-F7				X	X	
G12-G1	X					
H12-H1			X	X	X	X
G6-G7	X					
H6-H7			X	X	X	X

Circuit Breaker Control

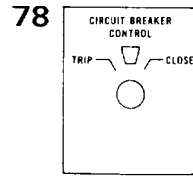
Style No. 508A284G01
 Handle: Pistol Grip Fixed
 Contacts: Momentary
 Stages: 4, Six Contact Frame
 Mounting: 1 8-1/4
 Target: Yes



Circuit Breaker Control

Style No. 508A207G02
 Handle: Pistol Grip Fixed
 Contacts: Momentary
 Stages: 1, Six Contact Frame
 Mounting: 1/8-1/4
 Target: Yes

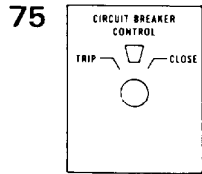
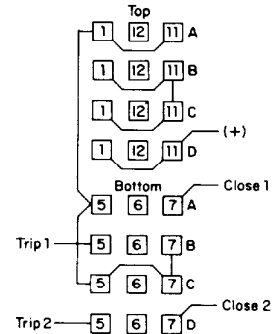
CONTACT	POSITION		
	T	O	C
	T	C	C
A11-B11	X		
A12-B12		X	
A1-B1			X
A5-B5	X		
A6-B6		X	
A7-B7			X



**Circuit Breaker Control
 For Operating Two Breakers**

Style No. 508A218G07
 Handle: Pistol Grip Fixed
 Contacts: Momentary
 Stages: 2, Six Contact Frame
 Mounting: 1/8-1/4
 Target: Yes

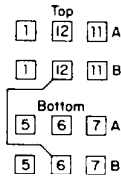
CONTACT	POSITION		
	T	N	C
	T	NT	C
A11-B11	X		
A12-B12		X	
A1-B1			X
A5-B5	X		
A6-B6		X	
A7-B7			X
C11-D11	X		
C12-D12		X	
C1-D1			X
C5-D5	X		
C6-D6		X	
C7-D7			X



Circuit Breaker Control

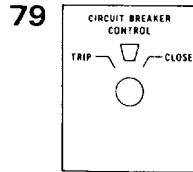
Style No. 505A738G07
 Handle: Pistol Grip Fixed
 Contacts: Momentary
 Stages: 1, Six Contact Frame
 Mounting: 1 8-1/4
 Target: Yes

CONTACT	POSITION					
	T	N	N	C	C	C
	T	NT	NT	T	C	C
A11-B11	X					
A12-B12		X	X			
A1-B1				X	X	
A5-A6	X	X				
A6-A7			X	X		
B5-B6	X	X				
B6-B7			X	X		



**Tabulation of Switch With
 Extra Connectors Added.**

A11-B11	X				
A1-B1				X	
A5-A6	X	X			
A6-A7			X	X	
A12-B5		X			
A12-B7			X		



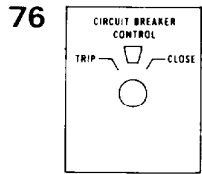
Circuit Breaker Control

Style No. 508A229G01
 Handle: Pistol Grip Fixed
 Contacts: Momentary
 Stages: 2, Six Contact Frame
 Mounting: 1/8-1/4
 Target: Yes

CONTACT	POSITION					
	T	N	N	C	C	C
	T	NT	NT	T	C	C
A11-B11	X					
A12-B12		X	X			
A1-B1					X	
A5-B5	X					
A6-B6		X	X			
A7-B7					X	
C11-D11	X					
C12-D12		X	X			
C1-D1					X	
C5-C6	X	X				
C6-C7			X	X		
D5-D6	X	X				
D6-D7			X	X		

NOTES:

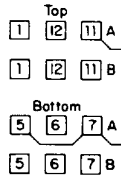
(R) = Switch for Removable Handle
 (B) = Basic Switch



Circuit Breaker Control

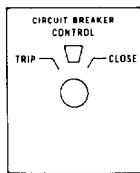
Style No. 802A231G01
 Handle: Pistol Grip Fixed
 Contacts: Momentary
 Stages: 1, Six Contact Frame
 Mounting: 1 8-1/4
 Target: Yes

CONTACT	POSITION					
	T	N	N	C	C	C
	T	NT	NT	T	C	C
A11-B11	X					
A12-B12		X				
A1-B1				X		
A5-B5				X		
A6-B6				X		
A7-B7	X					



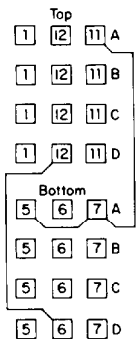
Position Tabulations, *Continued*

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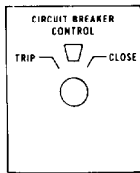


Circuit Breaker Control
 Style No. 8116A39G01
 Handle: Pistol Grip Fixed
 Contacts: Momentary
 Stages: 2, Six Contact Frame
 Mounting: 1/8-1/4
 Target: Yes

CONTACT	POSITION			
	T	N	M	C
	NT	MT		
A11-B11	X			
A12-B12		X	X	
A1-B1				X
A5-B5				X
A6-B6				
A7-B7	X			
C11-D11	X			
C12-D12		X	X	
C1-D1				X
C5-C6	X	X		
C6-C7			X	X
D5-D6	X	X		
D6-D7			X	X

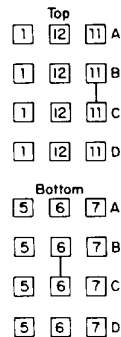


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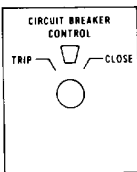


Circuit Breaker Control
 Style No. 508A480G08
 Handle: Pistol Grip Fixed
 Contacts: Momentary
 Stages: 2, Six Contact Frame
 Mounting: 1/8-1/4
 Target: Yes

CONTACT	POSITION			
	T	N	M	C
	NT	MT		
A11-B11	X			
A12-B12		X	X	
A1-B1				X
A5-A6	X	X		
A6-A7			X	X
B5-B6	X	X		
B6-B7			X	X
C11-D11	X			
C12-D12		X	X	
C1-D1				X
C5-C6	X	X		
C6-C7			X	X
D5-D6	X	X		
D6-D7			X	X

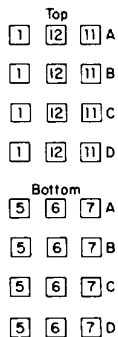


81

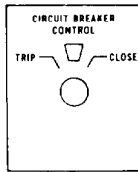


Circuit Breaker Control
 Style No. 508A480G01
 Handle: Pistol Grip Fixed
 Contacts: Momentary
 Stages: 2, Six Contact Frame
 Mounting: 1/8-1/4
 Target: Yes

CONTACT	POSITION			
	T	N	M	C
	NT	MT		
A11-B11	X			
A12-B12		X	X	
A1-B1				X
A5-A6	X	X		
A6-A7			X	X
B5-B6	X	X		
B6-B7			X	X
C11-D11	X			
C12-D12		X	X	
C1-D1				X
C5-C6	X	X		
C6-C7			X	X
D5-D6	X	X		
D6-D7			X	X

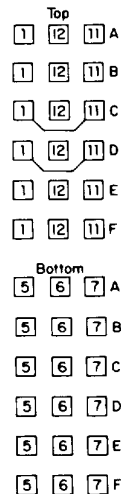


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Circuit Breaker Control
 Style No. 508A255G03
 Handle: Pistol Grip Fixed
 Contacts: Momentary
 Stages: 3, Six Contact Frame
 Mounting: 1/8-1/4
 Target: Yes

CONTACT	POSITION			
	T	N	M	C
	NT	MT		
A11-B11	X			
A12-B12		X	X	
A1-B1				X
A5-B5	X			
A6-B6		X	X	
A7-B7			X	X
C11-D11	X			
C12-D12		X	X	
C1-D1				X
C5-C6	X	X		
C6-C7			X	X
D5-D6	X	X		
D6-D7			X	X
E11-F11	X			
E12-F12		X	X	
E1-F1				X
E5-E6	X	X		
E6-E7			X	X
F5-F6	X	X		
F6-F7			X	X



NOTES:

- (R) = Switch for Removable Handle
- (B) = Basic Switch

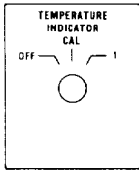


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Position Tabulations, *Continued*

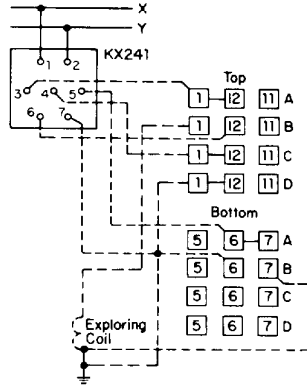
84



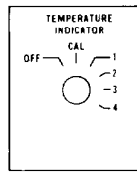
Temperature
Accurate Lead Compensation

Gold Contacts - 1 RTD
Style No. 781A254G01
Handle: Round Fixed
Contacts: Maintained
Stages: 2. Six Contact Frame
Mounting: 1/8-1/4
Target: No

CONTACT	POSITION			
	O	-	C	1
A11-B11	X	X		
A12-B12		X	X	X
A1-B1			X	X
A5-B5	X	X		
A6-B6		X	X	X
A7-B7			X	X
C11-D11	X			
C12-D12			X	X
C1-D1				X
C5-D5	X			
C6-D6			X	X
C7-D7				X



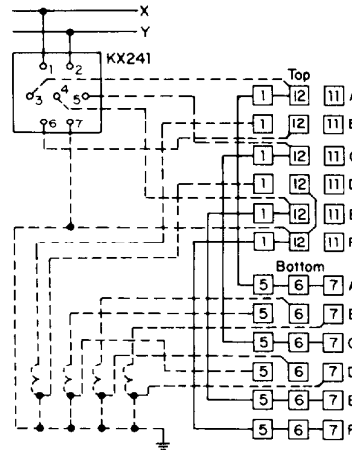
85



Temperature
Accurate Lead Compensation

Gold Contacts - 4 RTD's
Style No. 505A709G01
Handle: Round Fixed
Contacts: Maintained
Stages: 3. Six Contact Frame
Mounting: 1/8-1/4
Target: No

CONTACT	POSITION							
	O	-	C	1	2	3	4	
A11-B11	X	X						
A12-B12		X	X	X				
A1-B1			X	X	X			
A5-B5	X	X			X	X	X	
A6-B6			X	X		X	X	
A7-B7						X	X	
C11-D11	X	X					X	
C12-D12			X	X	X			
C1-D1			X	X	X			
C5-D5	X	X			X	X	X	
C6-D6			X	X		X	X	
C7-D7						X	X	
E11-F11	X						X	
E12-F12			X					
E1-F1				X				
E5-F5	X	X			X	X	X	
E6-F6			X	X		X	X	
E7-F7						X	X	



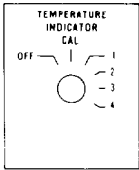
* Note: Adjacent Overlap Contacts are Electrically Connected Together During Transfer.

NOTES:

(R) = Switch for Removable Handle
(B) = Basic Switch

Position Tabulations, *Continued*

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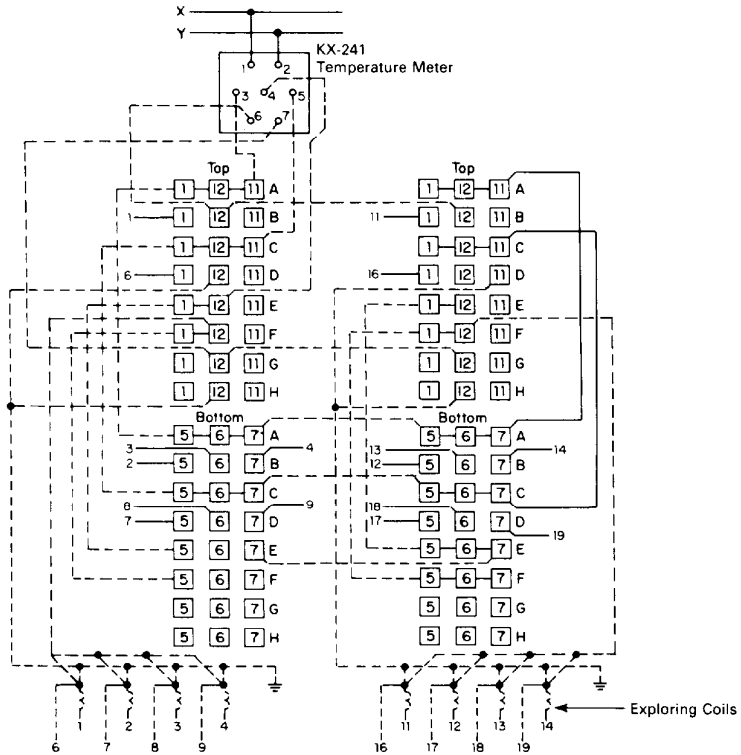


Temperature
Accurate Lead Compensation

Gold Contacts - 4 RTD's
(R) Style No. 505A711G01
Handle: Removable Key
Contacts: Maintained
Stages: 4. Six Contact Frame
Mounting: 1/8-1/4
Target: No

Handle Removable in OFF Position Only
Handle Not Furnished With Switch
Ref. to Handle S#505A711G03

CONTACT	POSITION							
	11	12	1	2	3	4		
A11-B11	X	X						
A12-B12	X	X	X	X				*
A1-B1			X	X	X			*
A5-B5				X	X	X		*
A6-B6					X	X	X	*
A7-B7						X	X	*
C11-D11	X	X						*
C12-D12	X	X	X	X				*
C1-O1			X	X	X			*
C5-D5				X	X	X		*
C6-D6					X	X	X	*
C7-D7						X	X	*
E11-F11	X						X	X
E12-F12		X						
E1-F1			X					
E5-F5				X				
E6-F6					X			
E7-F7							X	
G11-H11	X	X						
G12-H12	X	X	X	X				
G1-H1			X	X	X			
G5-H5				X	X	X		
G6-H6					X	X	X	
G7-H7						X	X	



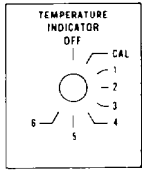
* Note: Adjacent Overlap Contacts are Electrically Connected Together During Transfer.

NOTES:

- (R) = Switch for Removable Handle
- (B) = Basic Switch

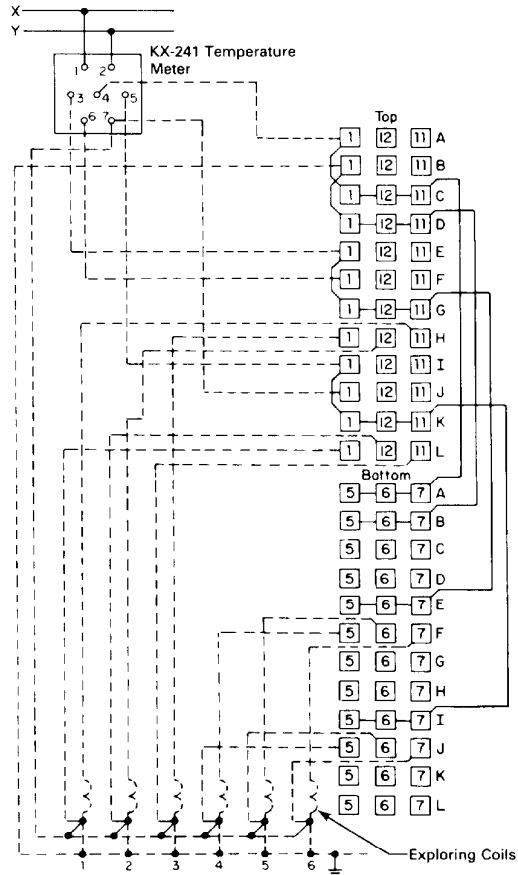
Position Tabulations, *Continued*

87



Temperature
 Accurate Lead Compensation
 Gold Contacts - 6 RTD's
 Style No. 661A210G06
 Handle: Round Fixed
 Contacts: Maintained
 Stages: 6. Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

CONTACT	POSITION								
	0	-	C	1	2	3	4	5	6
A12-B12	X								
A1-B1			X						
A5-B5							X		
A6-B6								X	
A7-B7									X
C11-D11				X					
C12-D12					X				
C1-D1						X			
E12-F12	X	X							
E1-F1		X	X	X					
E5-F5						X	X	X	
E6-F6							X	X	X
E7-F7								X	X
G11-H11			X	X	X				
G12-H12				X	X	X			
G1-H1					X	X	X		
I12-J12	X	X							
I1-J1		X	X	X					
I5-J5						X	X	X	
I6-J6							X	X	X
I7-J7								X	X
K11-L11			X	X	X				
K12-L12				X	X	X			
K1-L1					X	X	X		

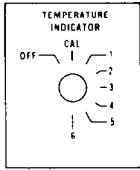


NOTES:

- (R) = Switch for Removable Handle
- (B) = Basic Switch

Position Tabulations, *Continued*

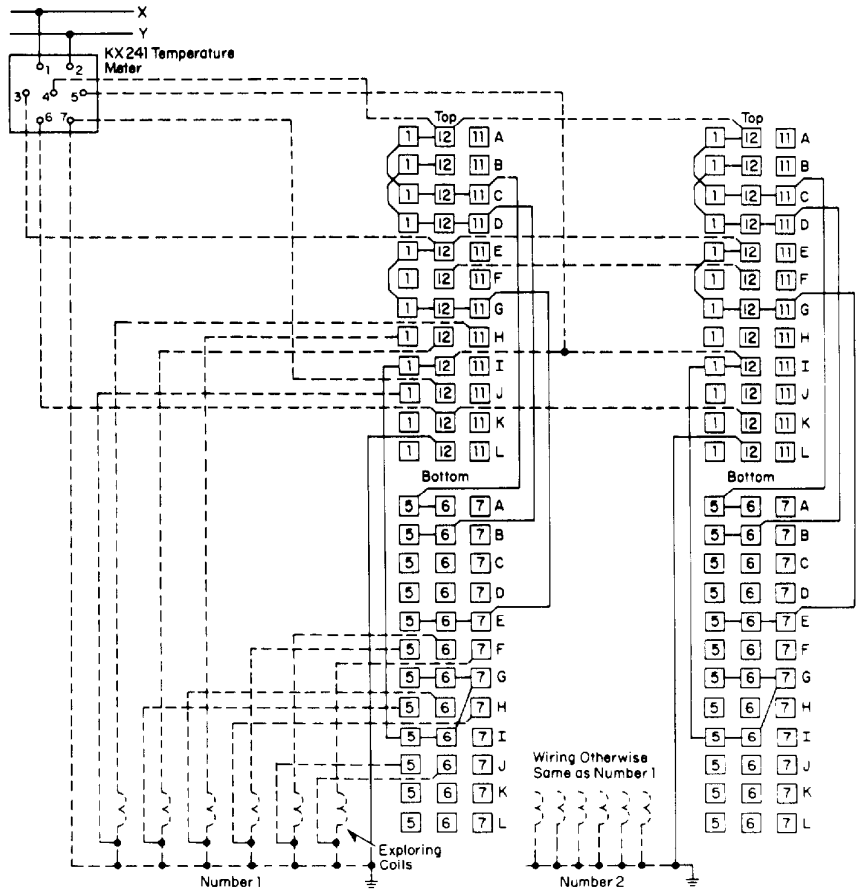
88



Temperature
Accurate Lead Compensation
Gold Contacts - 6 RTD's
(R) Style No. 781A489G01
Handle: Removable Key
Contacts: Maintained
Stages: 6. Six Contact Frame
Mounting: 1/8-1/4
Target: No

Note:
Handle Removable in OFF Position Only.
Handle Not Furnished With Switch.
Ref to Handle S#505A765G03 (Round)

CONTACT	POSITION							
	O	C	1	2	3	4	5	6
A11-B11	X							
A12-B12		X						
A1-B1			X					
A5-B5							X	
A6-B6								X
A7-B7								
C11-D11				X				
C12-D12					X			
C1-D1						X		
C5-D5				X				
C6-D6					X			
C7-D7						X		
E11-F11	X	X						
E12-F12		X	X	X				
E1-F1			X	X	X			
E5-F5						X	X	X
E6-F6							X	X
E7-F7								
G11-H11			X	X	X			
G12-H12				X	X	X		
G1-H1						X	X	X
G5-H5			X	X	X			
G6-H6				X	X	X		
G7-H7						X	X	X
I11-J11	X	X						
I12-J12		X	X	X				
I1-J1			X	X	X			
I5-J5						X	X	X
I6-J6							X	X
I7-J7								
K11-L11	X	X						
K12-L12		X	X	X				
K1-L1			X	X	X			
K5-L5						X	X	X
K6-L6							X	X
K7-L7								



NOTES:

(R) = Switch for Removable Handle
(B) = Basic Switch

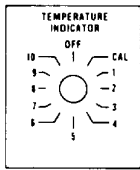


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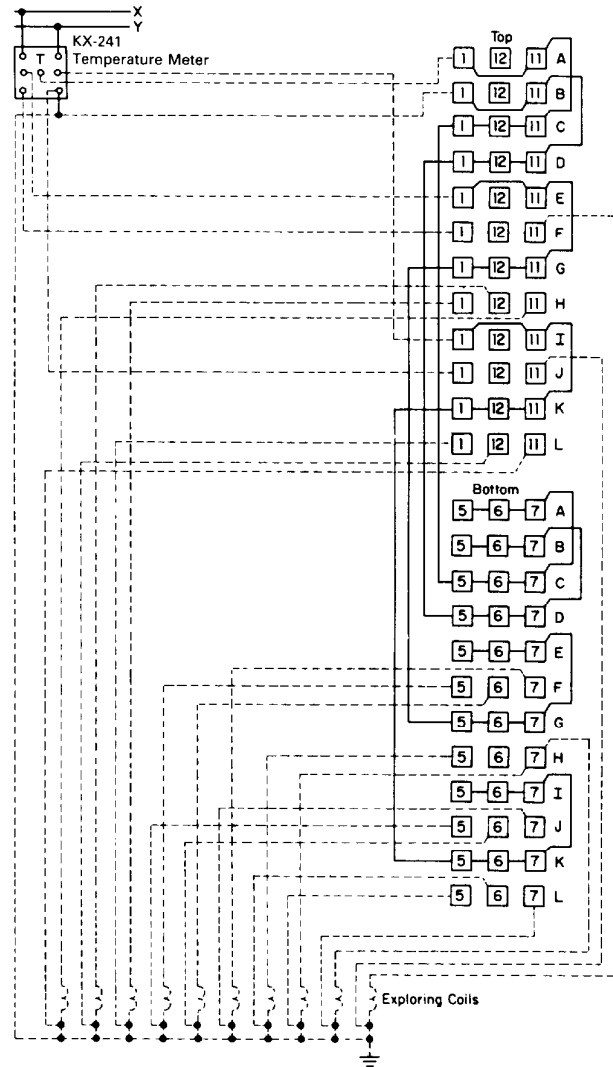
Position Tabulations, *Continued*

89



Temperature
Accurate Lead Compensation
 Gold Contacts - 10 RTD's
 Style No. 661A210G01
 Handle: Round Fixed
 Contacts: Maintained
 Stages: 6. Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

CONTACT	POSITION										
	0	1	2	3	4	5	6	7	8	9	10
A11-B11											X
A12-B12	X										
A1-B1		X									
A5-B5					X						
A6-B6						X					
A7-B7							X				
C11-D11		X									
C12-D12			X								
C1-D1				X							
C5-D5					X						
C6-D6						X					
C7-D7							X				
E11-F11								X	X	X	X
E12-F12	X	X									X
E1-F1	X	X	X								
E5-F5				X	X	X					
E6-F6					X	X	X				
E7-F7						X	X	X			
G11-H11	X	X	X	X							
G12-H12		X	X	X	X						
G1-H1			X	X	X						
G5-H5				X	X	X					
G6-H6					X	X	X				
G7-H7						X	X	X			
I11-J11								X	X	X	X
I12-J12	X	X									X
I1-J1	X	X	X								
I5-J5				X	X	X					
I6-J6					X	X	X				
I7-J7						X	X	X			
K11-L11	X	X	X								
K12-L12		X	X	X	X						
K1-L1			X	X	X						
K5-L5				X	X	X					
K6-L6					X	X	X				
K7-L7						X	X	X			



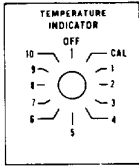
* Note: Adjacent Overlap Contacts are Electrically Connected Together During Transfer.

NOTES:

- (R) = Switch for Removable Handle
- (B) = Basic Switch

Position Tabulations, *Continued*

90



Temperature

Accurate Lead Compensation

Gold Contacts - 10 RTD's
(R) Style No. 663A454G01

Handle: Removable Key

Contacts: Maintained

Stages: 7. Six Contact Frame

Mounting: 1/8-1/4

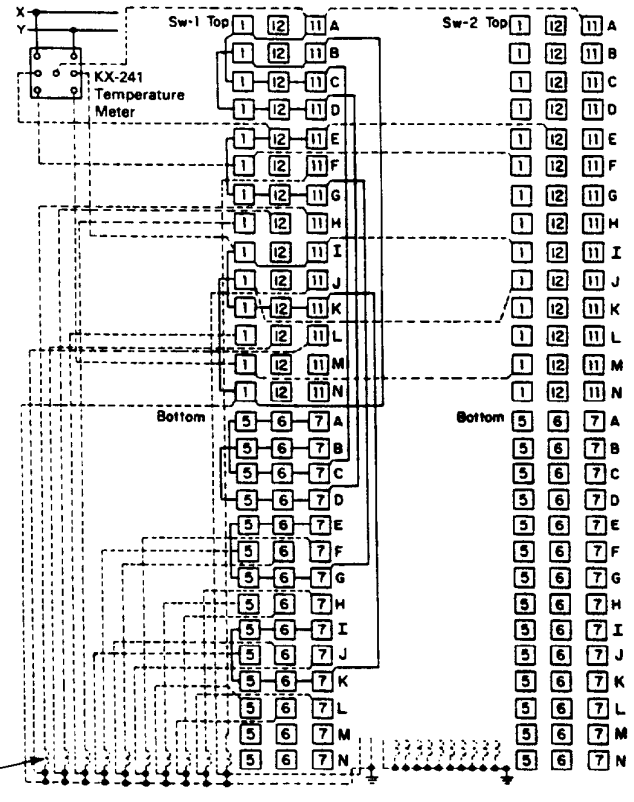
Target: No

Handle Removable in OFF Position Only

Handle Not Furnished With Switch

Ref. to Handle S#505A711G03

CONTACT	POSITION										
	0	1	2	3	4	5	6	7	8	9	10
A11-B11											X
A12-B12	X										
A1-B1		X									
A3-B5					X						
A6-B6						X					
A7-B7							X				
C11-D11			X								
C12-D12				X							
C1-D1					X						
C5-D5							X				
C6-D6								X			
C7-D7									X		
E11-F11									X	X	X
E12-F12	X	X									X
E1-F1		X	X	X							
E5-F5					X	X	X				
E6-F6						X	X	X			
E7-F7							X	X	X		
G11-H11		X	X	X							
G12-H12			X	X	X						
G1-H1				X	X	X					
G5-H5						X	X	X			
G6-H6							X	X	X		
G7-H7								X	X	X	



Note: Wiring for Sw-2 Same as for Sw-1.

NOTES:

(R) = Switch for Removable Handle

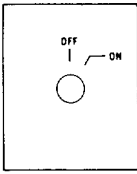
(B) = Basic Switch



UNIT OF ELECTRO SWITCH CORP. • 180 KING AVENUE • WEYMOUTH, MASSACHUSETTS 02188 • TELEPHONE: (781) 335-5200 FAX: (781) 335-4253

Position Tabulations, *Continued*

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OFF-ON Switch

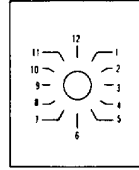
Fixed Handle Maintained Momentary
 Oval 505A706G01 505A723G01
 Pistol Grip 505A706G02 505A723G02
 Round 505A706G03 505A723G03

Stage: 1, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

CONTACT	POSITION	
	OFF	ON
A11-B11		X
A12-B12	X	
A1-B1		X
A5-B5		X
A6-B6	X	
A7-B7		X

- Top**
 1 12 11 A
 1 12 11 B
- Bottom**
 5 6 7 A
 5 6 7 B

94



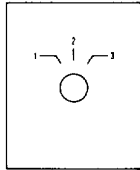
Selector Switch

1 Pole - 12 Throw
 Style No. 505A745G01
 Handle: Oval Fixed
 Contacts: Maintained
 Stages: 2, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

CONTACT	POSITION											
	11	12	1	2	3	4	5	6	7	8	9	10
A11-B11	X											
A12-B12		X										
A1-B1			X									
A5-B5						X						
A6-B6							X					
A7-B7								X				
C11-D11			X						X			
C12-D12				X								
C1-D1					X							
C5-D5								X				
C6-D6									X			
C7-D7										X		

- Top**
 1 12 11 A
 1 12 11 B
 1 12 11 C
 1 12 11 D
- Bottom**
 5 6 7 A
 5 6 7 B
 5 6 7 C
 5 6 7 D

92



Selector Switch

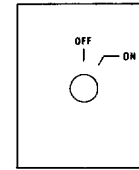
2 Pole - 3 Throw
 Style No. 505A702L03
 Handle: Oval Fixed
 Contacts: Maintained

Style No. 3745A75G23
 Handle: Oval Fixed
 Contacts: Momentary
 Stages: 1, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

CONTACT	POSITION		
	1	2	3
A11-B11	X		
A12-B12		X	
A1-B1			X
A5-B5	X		
A6-B6		X	
A7-B7			X

- Top**
 1 12 11 A
 1 12 11 B
- Bottom**
 5 6 7 A
 5 6 7 B

95



OFF-ON Switch

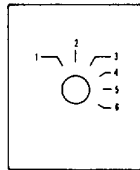
Fixed Handle Maintained Momentary
 Oval 505A722G01 505A725G06
 Pistol Grip 505A722G02 505A725G01
 Round 505A722G03 505A725G11

Stage: 2, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No.

CONTACT	POSITION	
	OFF	ON
A11-B11	X	
A12-B12	X	
A1-B1		X
A5-B5		X
A6-B6	X	
A7-B7		X
C11-D11	X	
C12-D12	X	
C1-D1		X
C5-D5		X
C6-D6	X	
C7-D7		X

- Top**
 1 12 11 A
 1 12 11 B
 1 12 11 C
 1 12 11 D
- Bottom**
 5 6 7 A
 5 6 7 B
 5 6 7 C
 5 6 7 D

93



Selector Switch

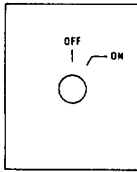
1 Pole - 6 Throw
 Style No. 505A733G01
 Handle: Oval Fixed
 Contacts: Maintained
 Stages: 1, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

CONTACT	POSITION					
	1	2	3	4	5	6
A11-B11	X					
A12-B12		X				
A1-B1			X			
A5-B5				X		
A6-B6					X	
A7-B7						X

- Top**
 1 12 11 A
 1 12 11 B
- Bottom**
 5 6 7 A
 5 6 7 B

Position Tabulations, *Continued*

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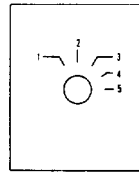
OFF-ON Switch

Style No. 505A781G03
Handle: Oval Fixed
Contacts: Maintained

Style No. 505A782G01
Handle: Oval Fixed
Contacts: Momentary
Stages: 3, Six Contact Frame
Mounting: 1/8-1/4
Target: No

CONTACT	POSITION	
	OFF	ON
A11-B11		X
A12-B12	X	
A1-B1		X
A5-B5		X
A6-B6	X	
A7-B7		X
C11-D11		X
C12-D12	X	
C1-D1		X
C5-D5		X
C6-D6	X	
C7-D7		X
E11-F11		X
E12-F12	X	
E1-F1		X
E5-F5		X
E6-F6	X	
E7-F7		X

99



General Application Switch
1 Pole - 5 Throw

Style No. 505A733G18
Handle: Oval Fixed
Contacts: Maintained
Stages: 1, Six Contact Frame
Mounting: 1/8-1/4
Target: No

CONTACT	POSITION				
	1	2	3	4	5
A11-B11	X				
A12-B12		X			
A1-B1			X		
A5-B5				X	
A6-B6					X

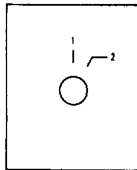
Top
1 2 11 A

1 2 11 B

Bottom
5 6 7 A

5 6 7 B

97



General Application Switch

1 and 2 Pole - 2 Throw

Style No. 505A706G55
Handle: Oval Fixed
Contacts: Maintained
Stages: 1, Six Contact Frame
Mounting: 1/8-1/4
Target: No

CONTACT	POSITION	
	1	2
A11-B11		X
A12-B12	X	
A1-B1		X
A5-B5		X
A6-B6	X	
A7-B7		X

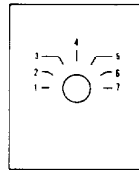
Top
1 2 11 A

1 2 11 B

Bottom
5 6 7 A

5 6 7 B

100



General Application Switch
1 Pole - 7 Throw

Style No. 505A745G17
Handle: Oval Fixed
Contacts: Maintained
Stages: 2, Six Contact Frame
Mounting: 1/8-1/4
Target: No

CONTACT	POSITION						
	1	2	3	4	5	6	7
A11-B11		X					
A12-B12			X				
A1-B1				X			
C11-D11					X		
C12-D12						X	
C6-D6	X						
C7-D7		X					

Top
1 2 11 A

1 2 11 B

1 2 11 C

1 2 11 D

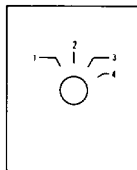
Bottom
5 6 7 A

5 6 7 B

5 6 7 C

5 6 7 D

98



General Application Switch

1 Pole - 4 Throw

Style No. 505A733G17
Handle: Oval Fixed
Contacts: Maintained
Stages: 1, Six Contact Frame
Mounting: 1/8-1/4
Target: No

CONTACT	POSITION			
	1	2	3	4
A11-B11	X			
A12-B12		X		
A1-B1			X	
A5-B5				X

Top
1 2 11 A

1 2 11 B

Bottom
5 6 7 A

5 6 7 B

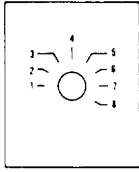


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Position Tabulations, *Continued*

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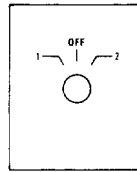
CONTACT	POSITION							
	1	2	3	4	5	6	7	8
A11-B11			X					
A12-B12				X				
A1-B1					X			
C11-D11						X		
C12-D12							X	
C1-D1								X
C6-D6	X							
C7-D7		X						

General Application Switch

1 Pole - 8 Throw
 Style No. 505A745G18
 Handle: Oval Fixed
 Contacts: Maintained
 Stages: 2, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

- Top
- 1 12 11 A
 - 1 12 11 B
 - 1 12 11 C
 - 1 12 11 D
- Bottom
- 5 6 7 A
 - 5 6 7 B
 - 5 6 7 C
 - 5 6 7 D

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General Application Switch
1 Pole or 2 Pole With OFF

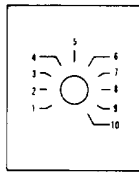
Style No. 505A702L02
 Handle: Oval Fixed
 Contacts: Maintained

Style No. 505A703G51
 Handle: Oval Fixed
 Contacts: Momentary
 Stages: 1, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

- Top
- 1 12 11 A
 - 1 12 11 B
- Bottom
- 5 6 7 A
 - 5 6 7 B

CONTACT	POSITION		
	1	0	2
A11-B11	X		
A12-B12		X	
A1-B1			X
A5-B5	X		
A6-B6		X	
A7-B7			X

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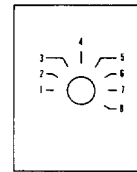
CONTACT	POSITION									
	1	2	3	4	5	6	7	8	9	10
A11-B11				X						
A12-B12					X					
A1-B1						X				
C11-D11							X			
C12-D12								X		
C1-D1									X	
A5-B5										X
C5-D5	X									
C6-D6		X								
C7-D7			X							

General Application Switch

1 Pole - 10 Throw
 Style No. 505A745G19
 Handle: Oval Fixed
 Contacts: Maintained
 Stages: 2, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

- Top
- 1 12 11 A
 - 1 12 11 B
 - 1 12 11 C
 - 1 12 11 D
- Bottom
- 5 6 7 A
 - 5 6 7 B
 - 5 6 7 C
 - 5 6 7 D

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General Application Switch

2 Pole - 8 Throw
 Style No. 508A423G16
 Handle: Oval Fixed
 Contacts: Maintained
 Stages: 4, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

CONTACT	POSITION							
	1	2	3	4	5	6	7	8
A11-B11			X					
A12-B12				X				
A1-B1					X			
C11-D11						X		
C12-D12							X	
C1-D1								X
C6-D6	X							
C7-D7		X						
E11-F11				X				
E12-F12					X			
E1-F1						X		
G11-H11							X	
G12-H12								X
G1-H1								X
G6-H6	X							
G7-H7		X						

- Top
- 1 12 11 A
 - 1 12 11 B
 - 1 12 11 C
 - 1 12 11 D
 - 1 12 11 E
 - 1 12 11 F
 - 1 12 11 G
 - 1 12 11 H
- Bottom
- 5 6 7 A
 - 5 6 7 B
 - 5 6 7 C
 - 5 6 7 D
 - 5 6 7 E
 - 5 6 7 F
 - 5 6 7 G
 - 5 6 7 H

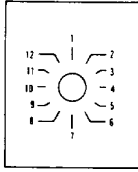


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Position Tabulations, *Continued*

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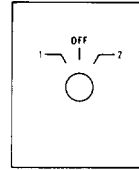
General Application Switch

2 Pole - 12 Throw

Style No. 508A423G17
 Handle: Oval Fixed
 Contacts: Maintained
 Stages: 4, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

CONTACT	POSITION											
	12	1	2	3	4	5	6	7	8	9	10	11
A11-B11	X											
A12-B12		X										
A1-B1			X									
A5-B5						X						
A6-B6							X					
A7-B7								X				
C11-D11			X						X			
C12-D12				X								
C1-D1					X							
C5-D5								X				
C6-D6									X			
C7-D7										X		
E11-F11	X										X	
E12-F12		X										X
E1-F1			X									
E5-F5						X						
E6-F6							X					
E7-F7								X				
G11-H11			X						X			
G12-H12				X								
G1-H1					X							
G5-H5								X				
G6-H6									X			
G7-H7										X		

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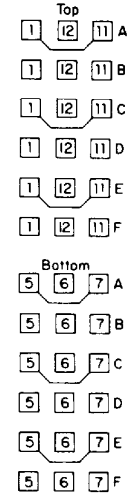
General Application Switch

6 Pole - 2 Throw

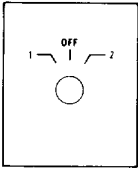
Style No. 505A726G14
 Handle: Oval Fixed
 Contacts: Maintained

Style No. 505A727G15
 Handle: Oval Fixed
 Contacts: Momentary
 Stages: 3, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

CONTACT	POSITION	
	1	2
A11-B11	X	
A12-B12		X
A1-B1		X
A5-B5	X	
A6-B6		X
A7-B7		X
C11-D11	X	
C12-D12		X
C1-D1		X
C5-D5	X	
C6-D6		X
C7-D7		X
E11-F11	X	
E12-F12		X
E1-F1		X
E5-F5	X	
E6-F6		X
E7-F7		X



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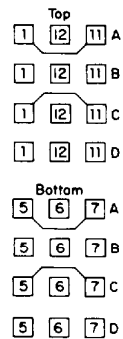
General Application Switch

4 Pole - 2 Throw

Style No. 505A712G92
 Handle: Oval Fixed
 Contacts: Maintained

Style No. 505A715G32
 Handle: Oval Fixed
 Contacts: Momentary
 Stages: 2, Six Contact Frame
 Mounting: 1/8-1/4
 Target: No

CONTACT	POSITION	
	1	2
A11-B11	X	
A12-B12		X
A1-B1		X
A5-B5	X	
A6-B6		X
A7-B7		X
C11-D11	X	
C12-D12		X
C1-D1		X
C5-D5	X	
C6-D6		X
C7-D7		X



ELECTROSWITCH • SWITCHES & RELAYS

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Basic Switches-Style Numbers

Basic switches **DO NOT** include handle, nameplate or external jumpers; these items may be ordered separately. For handles see page 7, nameplates see page 7 and external jumpers see page 9.

For complete switch style including handle, nameplate and jumpers, contact the factory.

Momentary Contacts (Control Switch) Spring return to position 12				Maintained Contacts (Instrument Switch)							
Figure	Basic Switch	Target	Handle Type	Figure	Basic Switch	Target	Handle Type	Figure	Basic Switch	Target	Handle Type
108	505A623G01	No	Fixed	108	505A606G01	No	Fixed	135	508A199G01	No	Fixed
108	663A177G01	No	Removable	108	505A647G01	No	Removable	135	508A300G01	No	Removable
109	505A668G01	No	Fixed	109	505A667G01	No	Fixed	136	505A633G01	No	Fixed
111	505A607G01	No	Fixed	109	505A669G01	No	Removable	137	508A302G01	No	Fixed
112	505A625G01	No	Fixed	110	508A396G01	No	Fixed	138	508A363G01	No	Fixed
113	505A624G01	No	Fixed	111	505A634G01	No	Fixed	139	508A307G01	No	Fixed
114	505A684G01	No	Fixed	111	505A654G01	No	Removable	139	508A308G01	No	Removable
115	505A603G01	No	Fixed	112	505A622G01	No	Fixed	140	508A310G01	No	Fixed
115	508A107G01	Yes	Fixed	112	505A670G01	No	Removable	140	508A311G01	No	Removable
115	663A195G01	No	Removable	113	505A621G01	No	Fixed	141	508A314G01	No	Fixed
116	508A110G01	No	Fixed	113	505A672G01	No	Removable	141	508A370G01	No	Removable
117	508A111G01	No	Fixed	114	505A628G01	No	Fixed	142	508A317G01	No	Fixed
117	505A638G01	Yes	Fixed	114	505A685G01	No	Removable	143	505A645G01	No	Fixed
118	505A615G01	No	Fixed	115	505A602G01	No	Fixed	143	508A320G01	No	Removable
118	508A118G01	Yes	Fixed	115	508A108G01	No	Removable	144	508A323G01	No	Fixed
119	508A125G01	No	Fixed	116	505A600G01	No	Fixed	144	781A181G01	No	Removable
120	508A127G01	No	Fixed	116	661A105G01	No	Removable	145	508A326G01	No	Fixed
121	508A128G01	No	Fixed	117	781A377G01	Yes	Fixed	146	505A650G01	No	Fixed
121	508A129G01	Yes	Fixed	117	508A112G01	No	Removable	146	661A152G01	No	Removable
122	508A133G01	No	Fixed	118	505A612G01	No	Fixed	147	505A659G01	No	Fixed
122	505A620G01	Yes	Fixed	118	508A119G01	No	Removable	147	661A150G01	No	Removable
123	508A143G01	No	Fixed	119	508A124G01	No	Fixed	148	505A660G01	No	Fixed
123	508A144G01	Yes	Fixed	120	508A126G01	No	Fixed	148	663A176G01	No	Removable
124	505A627G01	No	Fixed	122	658A594G01	Yes	Fixed	149	508A334G01	No	Fixed
124	508A145G01	Yes	Fixed	124	505A626G01	No	Fixed	149	663A175G01	No	Removable
125	508A189G01	No	Fixed	124	508A146G01	No	Removable	152	508A343G01	No	Fixed
125	508A161G01	Yes	Fixed	129	508A166G01	No	Fixed	152	781A123G01	No	Removable
126	508A162G01	Yes	Fixed	130	505A664G01	No	Fixed	153	508A351G01	No	Fixed
127	508A163G01	No	Fixed	133	505A631G01	No	Fixed	154	505A644G01	No	Fixed
127	508A164G01	Yes	Fixed	133	508A173G01	No	Removable	154	663A340G01	No	Removable
128	505A619G01	Yes	Fixed	134	508A196G01	No	Fixed				
129	508A167G01	Yes	Fixed	134	781A167G01	No	Removable				
130	505A630G01	No	Fixed								
131	508A181G01	Yes	Fixed								
132	508A183G01	No	Fixed								
132	508A184G01	Yes	Fixed								
133	505A632G01	No	Fixed								
146	505A651G01	No	Fixed								
147	658A542G01	No	Fixed								
148	658A578G01	No	Fixed								
150	505A661G01	Yes	Fixed								
151	508A342G01	Yes	Fixed								
152	508A344G01	No	Fixed								

REMOVABLE HANDLES are not supplied as part of switch and must be ordered separately. If a removable handle is required, specify the shape of the handle, the position in which the handle is to be removable and the style number of the switch on which it is to be used.



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Basic Switch Tabulations - See Page 43 for Style Numbers

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CONTACT	POSITION	
	I2	I1
A11-B11	X	
A12-B12	X	
A1-B1		X
A5-B5		X
A6-B6	X	
A7-B7		X

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CONTACT	POSITION	
	I2	I1
A11-B11	X	
A12-B12	X	
A1-B1		X
A5-B5		X
A6-B6	X	
A7-B7		X
C11-D11	X	
C12-D12	X	
C1-D1		X
C5-D5		X
C6-D6	X	
C7-D7		X
E11-F11	X	
E12-F12	X	
E1-F1		X
E5-F5		X
E6-F6	X	
E7-F7		X

118

CONTACT	POSITION	
	I1	I2
A11-B11	X	
A12-B12		X
A1-B1		X
A5-B5	X	
A6-B6		X
A7-B7		X
C11-D11	X	
C12-D12		X
C1-D1		X
C5-D5	X	
C6-D6		X
C7-D7		X

122

CONTACT	POSITION			
	P	I1	I2	I
A11-B11	X	X		
A12-B12		X	X	
A1-B1		X	X	
A5-B5	X	X		
A6-B6		X		
A7-B7		X		
C12-C1	X	X		
D12-D1	X	X	X	
C6-C7	X	X	X	
D6-D7	X	X	X	

126

CONTACT	POSITION			
	P	I1	I2	I
A11-B11	X	X		
A12-B12		X	X	
A1-B1		X	X	
A5-A6	X	X		
A6-A7		X	X	
B5-B6	X	X		
B6-B7		X	X	
C11-D11	X	X		
C12-D12		X	X	
C1-D1		X	X	
C5-C6	X	X	X	
C6-C7		X	X	
D5-D6	X	X	X	
D6-D7		X	X	
E12-E1	X			
F12-F1	X	X	X	
E6-E7	X	X	X	
F6-F7	X	X	X	

109

CONTACT	POSITION	
	I2	I1
A11-B11	X	
A12-B12	X	
A1-B1		X
A5-B5		X
A6-B6	X	
A7-B7		X

123

CONTACT	POSITION			
	P	I1	I2	I
A11-B11	X	X		
A12-B12		X	X	
A1-B1		X	X	
A5-A6	X	X		
A6-A7		X	X	
B5-B6	X	X		
B6-B7		X	X	
C12-C1	X	X		
D12-D1	X	X	X	
C6-C7	X	X	X	
D6-D7	X	X	X	

110

CONTACT	POSITION	
	I2	I1
A11-B11	X	
A12-B12	X	
A1-B1		X
A5-B5	X	X
A6-B6	X	X
A7-B7	X	X

119

CONTACT	POSITION	
	I1	I2
A11-B11	X	
A12-B12	X	X
A1-B1		X
A5-B5	X	X
A6-B6	X	X
A7-B7	X	X
C11-D11	X	X
C12-D12	X	X
C1-D1		X
C5-D5	X	X
C6-D6	X	X
C7-D7		X

127

CONTACT	POSITION			
	P	I1	I2	I
A11-B11	X	X		
A12-B12		X	X	
A1-B1		X	X	
A5-B5	X	X		
A6-B6		X	X	
A7-B7		X	X	
C11-D11	X	X		
C12-D12		X	X	
C1-D1		X	X	
C5-C6	X	X	X	
C6-C7		X	X	
D5-D6	X	X	X	
D6-D7		X	X	
E12-E1	X			
F12-F1	X	X	X	
E6-E7	X	X	X	
F6-F7	X	X	X	

115

CONTACT	POSITION	
	I1	I2
A11-B11	X	
A12-B12		X
A1-B1		X
A5-B5	X	
A6-B6		X
A7-B7		X

124

CONTACT	POSITION			
	P	I1	I2	I
A11-B11	X	X		
A12-B12		X	X	
A1-B1		X	X	
A5-B5	X	X		
A6-B6		X		
A7-B7		X		
C11-D11	X	X		
C12-D12		X	X	
C1-D1		X	X	
C5-D5	X	X		
C6-D6		X		
C7-D7		X		
E11-F11	X	X		
E12-F12		X	X	
E1-F1		X	X	
E5-F5	X	X		
E6-F6		X	X	
E7-F7		X	X	

111

CONTACT	POSITION	
	I2	I1
A11-B11	X	X
A12-B12	X	X
A1-B1	X	X
A5-B5	X	X
A6-B6	X	X
A7-B7	X	X

120

CONTACT	POSITION	
	I1	I2
A11-B11	X	
A12-B12	X	X
A1-B1		X
A5-B5	X	X
A6-B6	X	X
A7-B7	X	X
C11-D11	X	X
C12-D12		X
C1-D1		X
C5-D5	X	X
C6-D6		X
C7-D7		X

116

CONTACT	POSITION	
	I1	I2
A11-B11	X	
A12-B12	X	X
A1-B1		X
A5-B5	X	X
A6-B6	X	X
A7-B7	X	X

128

CONTACT	POSITION			
	P	I1	I2	I
A11-B11	X	X		
A12-B12		X	X	
A1-B1		X	X	
A5-A6	X	X		
A6-A7		X	X	
B5-B6	X	X		
B6-B7		X	X	
C11-D11	X	X		
C12-D12		X	X	
C1-D1		X	X	
C5-C6	X	X	X	
C6-C7		X	X	
D5-D6	X	X	X	
D6-D7		X	X	
E11-F11	X	X		
E12-F12		X	X	
E1-F1		X	X	
E5-E6	X	X	X	
F12-F1	X	X	X	
E6-E7	X	X	X	
F5-F6	X	X	X	
F6-F7	X	X	X	

112

CONTACT	POSITION	
	I2	I1
A11-B11	X	
A12-B12	X	
A1-B1		X
A5-B5		X
A6-B6	X	
A7-B7		X
C11-D11	X	
C12-D12	X	
C1-D1		X
C5-D5		X
C6-D6	X	
C7-D7		X

121

CONTACT	POSITION	
	I1	I2
A11-B11	X	
A12-B12	X	X
A1-B1		X
A5-B5	X	X
A6-B6	X	X
A7-B7	X	X
C11-D11	X	X
C12-D12	X	X
C1-D1		X
C5-C6	X	X
C6-C7		X
D5-D6	X	X
D6-D7		X

117

CONTACT	POSITION	
	I1	I2
A11-B11	X	
A12-B12	X	X
A1-B1		X
A5-A6	X	X
A6-A7	X	X
B5-B6	X	X
B6-B7	X	X

125

CONTACT	POSITION			
	P	I1	I2	I
A11-B11	X	X		
A12-B12		X	X	
A1-B1		X	X	
A5-B5	X	X		
A6-B6		X		
A7-B7		X		
C12-C1	X	X		
D12-D1	X	X	X	
C6-C7	X	X	X	
D6-D7	X	X	X	
E12-E1	X	X	X	
F12-F1	X	X	X	
E6-E7	X	X	X	
F6-F7	X	X	X	

* Adjacent overlap contacts are electrically connected together during transfer.

Basic Switch Tabulations - See Page 43 for Style Numbers

129

CONTACT	POSITION		
	11	12	1
A11-B11	X		
A12-B12		X	
A1-B1			X
A5-B5	X		
A6-B6		X	X
A7-B7			X
C11-D11	X		
C12-D12		X	X
C1-D1			X
C5-D5	X		
C6-D6		X	X
C7-D7			X
E12-F1	X	X	X
F12-F1	X	X	X
E6-E7		X	
F6-F7	X	X	X

132

CONTACT	POSITION			
	P	11	12	A
A11-B11	X	X		
A12-B12			X	X
A1-B1				X
A5-A6	X	X	X	
A6-A7			X	X
B5-B6	X	X	X	
B6-B7			X	X
C11-D11	X	X		
C12-D12			X	X
C1-D1			X	X
C5-C6	X	X	X	
C6-C7			X	X
D5-D6	X	X	X	
D6-D7			X	X
E11-F11	X	X		
E12-F12			X	X
E1-F1			X	
E5-E6	X	X	X	
E6-E7			X	X
F5-F6	X	X	X	
F6-F7			X	X
G12-G1	X			
H12-H1	X	X	X	
G6-G7	X			
H6-H7	X	X	X	X

134

CONTACT	POSITION		
	11	12	1
A11-B11	X		
A12-B12		X	
A1-B1			X
A5-B5	X		
A6-B6		X	X
A7-B7			X
C11-D11	X		
C12-D12		X	X
C1-D1			X
C5-D5	X		
C6-D6		X	X
C7-D7			X
E11-F11	X		
E12-F12		X	X
E1-F1			X
E5-F5	X		
E6-F6		X	X
E7-F7			X
G11-H11	X		
G12-H12		X	X
G1-H1			X
G5-H5	X		
G6-H6		X	X
G7-H7			X
I11-J11	X		
I12-J12		X	X
I1-J1			X
I5-J5	X		
I6-J6		X	X
I7-J7			X
K11-L11	X		
K12-L12		X	X
K1-L1			X
K5-L5	X		
K6-L6		X	X
K7-L7			X

137

CONTACT	POSITION			
	11	12	1	2
A11-B11	X	X		
A12-B12		X	X	
A1-B1			X	X
A5-B5			X	X
A6-B6			X	X
A7-B7			X	X

130

CONTACT	POSITION		
	11	12	1
A11-B11	X		
A12-B12		X	
A1-B1			X
A5-B5	X		
A6-B6		X	X
A7-B7			X
C11-D11	X		
C12-D12		X	X
C1-D1			X
C5-D5	X		
C6-D6		X	X
C7-D7			X
E11-F11	X		
E12-F12		X	X
E1-F1			X
E5-F5	X		
E6-F6		X	X
E7-F7			X
G11-H11	X		
G12-H12		X	X
G1-H1			X
G5-H5	X		
G6-H6		X	X
G7-H7			X

133

CONTACT	POSITION		
	11	12	1
A11-B11	X		
A12-B12		X	
A1-B1			X
A5-B5	X		
A6-B6		X	X
A7-B7			X
C11-D11	X		
C12-D12		X	X
C1-D1			X
C5-D5	X		
C6-D6		X	X
C7-D7			X
E11-F11	X		
E12-F12		X	X
E1-F1			X
E5-F5	X		
E6-F6		X	X
E7-F7			X
G11-H11	X		
G12-H12		X	X
G1-H1			X
G5-H5	X		
G6-H6		X	X
G7-H7			X
I11-J11	X		
I12-J12		X	X
I1-J1			X
I5-J5	X		
I6-J6		X	X
I7-J7			X

135

CONTACT	POSITION			
	10	11	12	1
A11-B11	X	X	X	X
A12-B12		X	X	X
A1-B1			X	X
A5-B5	X	X	X	
A6-B6		X	X	X
A7-B7			X	X
C11-D11	X	X	X	X
C12-D12	X	X	X	X
C1-D1	X	X	X	X
C5-D5	X	X	X	X
C6-D6	X	X	X	X
C7-D7	X	X	X	X
E11-F11	X			
E12-F12		X		
E1-F1			X	
E5-F5		X		
E6-F6			X	
E7-F7				X

139

CONTACT	POSITION			
	11	12	2	3
A11-B11	X			
A12-B12		X		
A1-B1			X	
A5-B5			X	
A6-B6			X	
A7-B7			X	
C11-D11	X			
C12-D12		X		
C1-D1			X	
C5-D5			X	
C6-D6			X	
C7-D7			X	
E11-F11	X			
E12-F12		X		
E1-F1			X	
E5-F5			X	
E6-F6			X	
E7-F7			X	

131

CONTACT	POSITION			
	P	11	12	A
A11-B11	X	X		
A12-B12			X	X
A1-B1				X
A5-B5	X	X		
A6-B6			X	X
A7-B7				X
C11-D11	X	X		
C12-D12			X	X
C1-D1			X	X
C5-C6	X	X	X	X
C6-C7			X	X
D5-D6	X	X	X	X
D6-D7			X	X
E11-F11	X	X		
E12-F12			X	X
E1-F1			X	
E5-E6	X	X	X	
E6-E7			X	X
F5-F6	X	X	X	
F6-F7			X	X
G12-G1	X			
H12-H1	X	X	X	X
G6-G7	X			
H6-H7	X	X	X	X

136

CONTACT	POSITION			
	11	12	2	3
A11-B11	X			
A12-B12		X		
A1-B1			X	
A5-B5			X	
A6-B6			X	
A7-B7			X	

140

CONTACT	POSITION			
	11	12	1	2
A11-B11	X	X		
A12-B12		X	X	
A1-B1			X	X
A5-B5			X	X
A6-B6			X	X
A7-B7			X	X
C11-D11	X	X		
C12-D12		X	X	
C1-D1			X	X
C5-D5			X	X
C6-D6			X	X
C7-D7			X	X
E11-F11	X	X		
E12-F12		X	X	
E1-F1			X	X
E5-F5			X	X
E6-F6			X	X
E7-F7			X	X

* Adjacent overlap contacts are electrically connected together during transfer.



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Basic Switch Tabulations - See Page 43 for Style Numbers

141

CONTACT	POSITION			
	11	12	1	2
A11-B11	X			
A12-B12	X			
A1-B1			X	
A5-B5	X			
A6-B6	X			
A7-B7			X	
C11-D11			X	
C12-D12				X
C1-D1				X
C5-D5			X	
C6-D6				X
C7-D7				X
E11-F11	X			
E12-F12	X			
E1-F1			X	
E5-F5	X			
E6-F6	X			
E7-F7			X	
G11-H11			X	
G12-H12				X
G1-H1				X
G5-H5			X	
G6-H6				X
G7-H7				X

143

CONTACT	POSITION									
	11	12	1	2	3	4	5	6	7	8
A11-B11	X									
A12-B12	X									
A1-B1		X								
A5-B5						X				
A6-B6							X			
A7-B7								X		
C11-D11			X							
C12-D12				X						
C1-D1					X					
C5-D5									X	
C6-D6										X
C7-D7										X

144

CONTACT	POSITION									
	11	12	1	2	3	4	5	6	7	8
A11-B11	X									
A12-B12	X									
A1-B1			X							
A5-B5							X			
A6-B6								X		
A7-B7									X	
C11-D11			X							
C12-D12				X						
C1-D1					X					
C5-D5									X	
C6-D6										X
C7-D7										X
E11-F11	X									
E12-F12	X									
E1-F1			X							
E5-F5							X			
E6-F6								X		
E7-F7									X	
G11-H11			X							
G12-H12				X						
G1-H1					X					
G5-H5									X	
G6-H6										X
G7-H7										X

146

CONTACT	POSITION	
	12	1
A11-B11	X	
A12-B12	X	
A1-B1		X
A2-B2	X	
A3-B3	X	
A4-B4	X	
A5-B5	X	
A6-B6	X	
A7-B7	X	
A8-B8	X	
A9-B9	X	
A10-B10	X	

142

CONTACT	POSITION			
	11	12	1	2
A11-B11	X			
A12-B12	X			
A1-B1			X	
A5-B5	X			
A6-B6	X			
A7-B7			X	
C11-D11			X	
C12-D12				X
C1-D1				X
C5-D5			X	
C6-D6				X
C7-D7				X
E11-F11	X			
E12-F12	X			
E1-F1			X	
E5-F5	X			
E6-F6	X			
E7-F7			X	
G11-H11			X	
G12-H12				X
G1-H1				X
G5-H5			X	
G6-H6				X
G7-H7				X
I11-J11	X			
I12-J12	X			
I1-J1			X	
I5-J5	X			
I6-J6	X			
I7-J7	X			
K11-L11			X	
K12-L12				X
K1-L1				X
K5-L5			X	
K6-L6				X
K7-L7				X

145

CONTACT	POSITION									
	11	12	1	2	3	4	5	6	7	8
A11-B11	X	X								
A12-B12	X	X	X	X						
A1-B1			X	X	X					
A5-B5						X	X	X		
A6-B6							X	X	X	
A7-B7								X	X	X
C11-D11	X	X	X	X	X	X	X	X	X	X
C12-D12	X	X	X	X	X	X	X	X	X	X
C1-D1	X	X	X	X	X	X	X	X	X	X
C5-D5	X	X	X	X	X	X	X	X	X	X
C6-D6	X	X	X	X	X	X	X	X	X	X
C7-D7	X	X	X	X	X	X	X	X	X	X
E11-F11	X	X								
E12-F12	X	X	X	X						
E1-F1			X	X	X					
E5-F5						X	X	X		
E6-F6							X	X	X	
E7-F7								X	X	X
G11-H11			X	X	X					
G12-H12				X	X	X				
G1-H1					X	X	X			
G5-H5								X	X	X
G6-H6									X	X
G7-H7										X
I11-J11	X	X	X	X	X	X	X	X	X	X
I12-J12	X	X	X	X	X	X	X	X	X	X
I1-J1	X	X	X	X	X	X	X	X	X	X
I5-J5	X	X	X	X	X	X	X	X	X	X
I6-J6	X	X	X	X	X	X	X	X	X	X
I7-J7	X	X	X	X	X	X	X	X	X	X
K11-L11			X	X	X					
K12-L12				X	X	X				
K1-L1					X	X	X			
K5-L5								X	X	X
K6-L6									X	X
K7-L7										X

147

CONTACT	POSITION	
	12	1
A12-B12	X	
A1-B1		X
A2-B2	X	
A3-B3	X	
A4-B4	X	
A5-B5	X	
A6-B6	X	
A7-B7	X	
A8-B8	X	
A9-B9	X	
A10-B10	X	
A11-B11	X	
C12-D12	X	
C1-D1	X	
C2-D2	X	
C3-D3	X	
C4-D4	X	
C5-D5	X	
C6-D6	X	
C7-D7	X	
C8-D8	X	
C9-D9	X	
C10-D10	X	
C11-D11	X	

148

CONTACT	POSITION	
	11	1
A11-B11	X	
A12-B12	X	
A1-B1		X
A2-B2	X	
A3-B3	X	
A4-B4	X	
A5-B5	X	
A6-B6	X	
A7-B7	X	
A8-B8	X	
A9-B9	X	
A10-B10	X	



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Basic Switch Tabulations - See Page 43 for Style Numbers

149

CONTACT	POSITION		
	11	12	1
A11-B11	X		
A12-B12		X	
A1-B1			X
A2-B2	X		
A3-B3		X	
A4-B4			X
A5-B5	X		
A6-B6		X	
A7-B7			X
A8-B8	X		
A9-B9		X	
A10-B10			X
C11-D11	X		
C12-D12		X	
C1-D1			X
C2-D2	X		
C3-D3		X	
C4-D4			X
C5-D5	X		
C6-D6		X	
C7-D7			X
C8-D8	X		
C9-D9		X	
C10-D10			X

150

CONTACT	POSITION			
	P	11	12	1
A11-B11	X	X		
A12-B12			X	X
A1-B1				X
A2-B2	X	X		
A3-B3			X	X
A4-B4				X
A5-A6	X	X	X	X
A6-A7			X	X
B5-B6	X	X	X	X
B6-B7			X	X
A8-A9	X	X	X	X
A9-A10			X	X
B8-B9	X	X	X	X
B9-B10			X	X

151

CONTACT	POSITION				
	P	11	12	A	1
A11-B11	X	X			
A12-B12			X	X	
A1-B1					X
A2-B2	X	X			
A3-B3			X	X	
A4-B4					X
A5-A6	X	X	X	X	
A6-A7			X	X	
B5-B6	X	X	X	X	
B6-B7			X	X	
A8-A9	X	X	X	X	
A9-A10			X	X	
B8-B9	X	X	X	X	
B9-B10			X	X	
C12-C1	X				
D12-D1		X	X	X	
C2-C3	X				
D2-D3		X	X	X	
C4-C5	X				
D4-D5		X	X	X	
C6-C6	X				
D6-D7		X	X	X	
C8-C9	X				
D8-D9		X	X	X	
C10-C11	X				
D10-D11		X	X	X	

152

CONTACT	POSITION		
	11	12	1
A11-B11	X		
A12-B12		X	
A1-B1			X
A2-B2	X		
A3-B3		X	
A4-B4			X
A5-B5		X	
A6-B6			X
A7-B7	X		
A8-B8		X	
A9-B9			X
A10-B10			X

153

CONTACT	POSITION				
	10	11	12	1	2
A10-B10	X				
A11-B11		X			
A12-B12			X		
A1-B1				X	
A2-B2					X
A3-B3					X
A4-B4	X				
A5-B5		X			
A6-B6			X		
A7-B7				X	
A8-B8					X
A9-B9					X

154

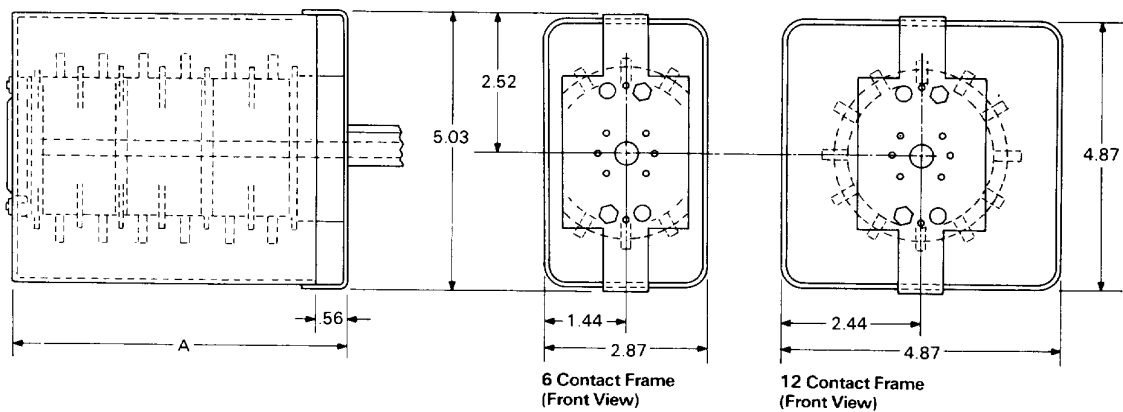
CONTACT	POSITION										
	12	1	2	3	4	5	6	7	8	9	10
A12-B12	X										
A1-B1		X									
A2-B2			X								
A3-B3				X							
A4-B4					X						
A5-B5						X					
A6-B6							X				
A7-B7								X			
A8-B8									X		
A9-B9										X	
A10-B10											X
A11-B11											X

Protective Covers

Designed to totally enclose all contact terminals. Made of high density black Polyethylene. No conduit connection provided. Wiring enters through opening between panel

and front opening of enclosure. Secured in position by switch tie bolts.

Switch Stage	A
1	2.88
2	4.38
3	5.88
4	7.38
5	8.88
6	10.38
7	11.88
8	13.38



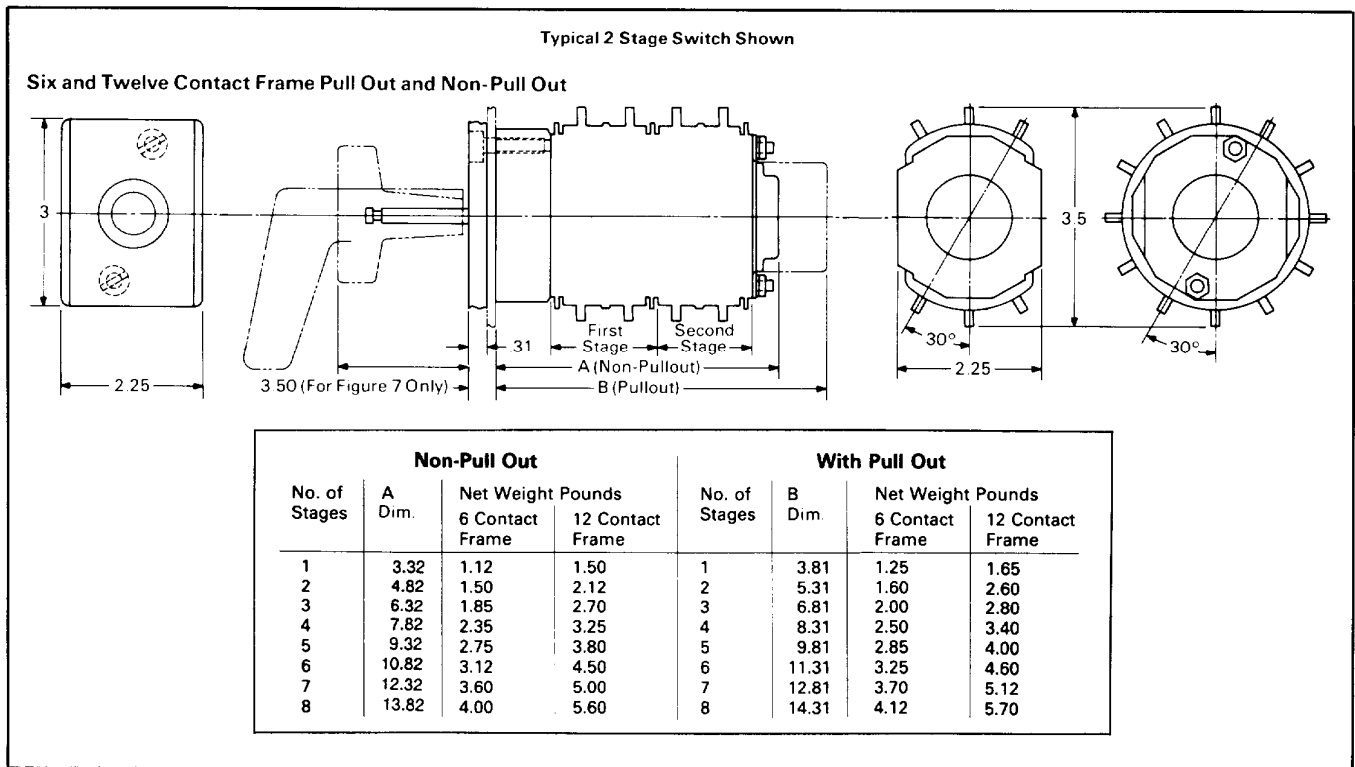
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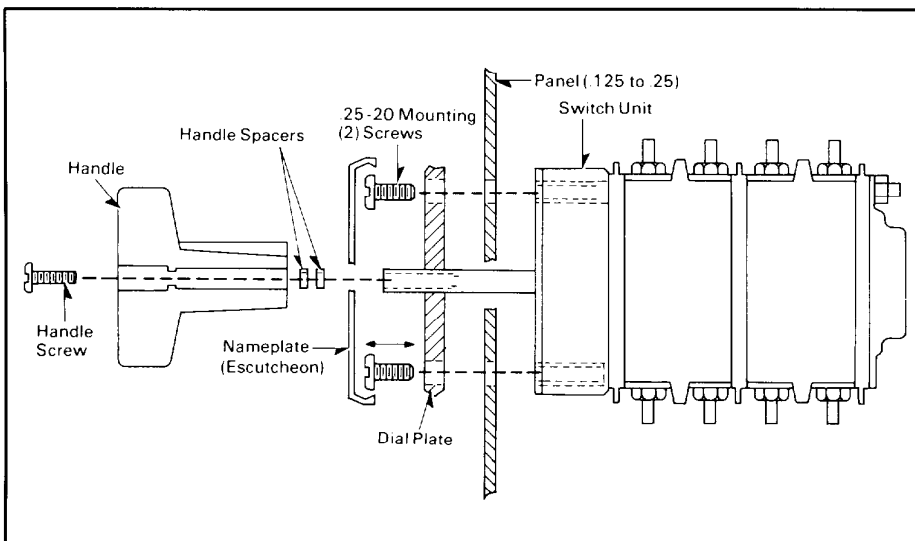
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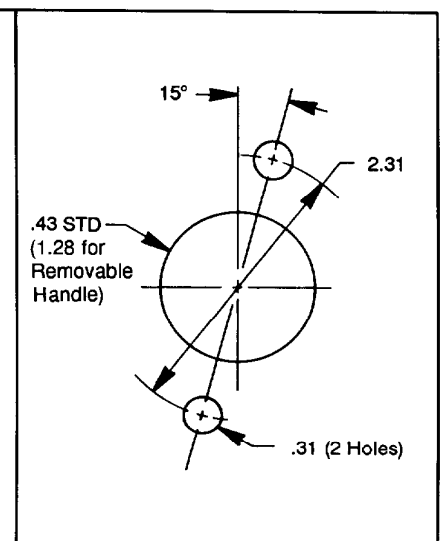
Outline Dimensions



Typical Mounting



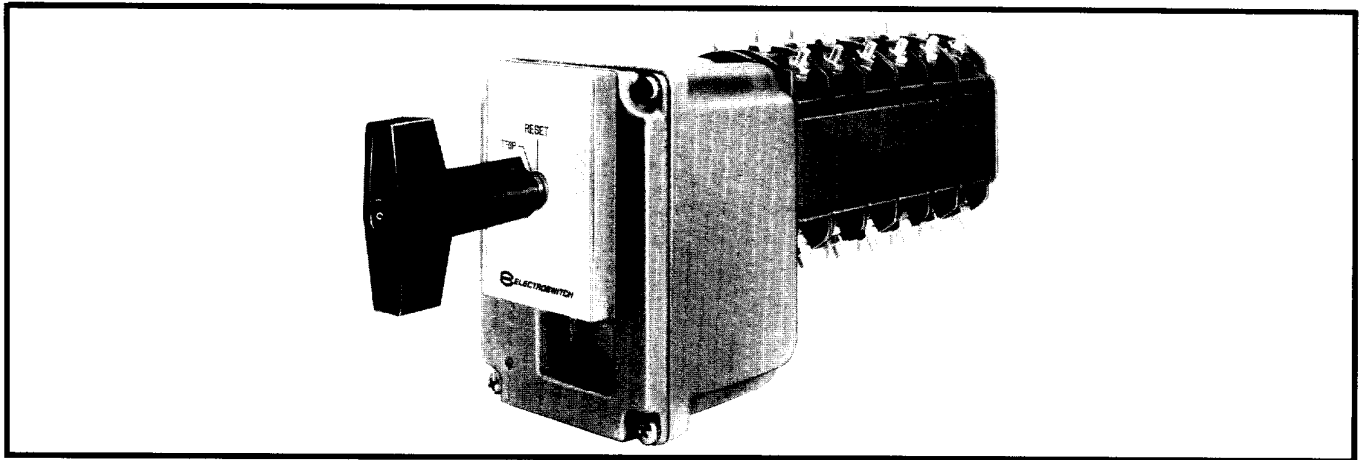
Panel Drilling



Type WL-2

Lock-Out Relay

600 Volts, 20 Amperes
Continuous Capacity
UL Recognized



Abstract

The Type WL-2 Lockout Relay is a control relay primarily used in applications requiring the simultaneous operation of a large number of contacts. The Type WL-2 is available in two versions, a "handle trip" unit, which can be tripped manually or electrically and a "non-handle" trip unit which will trip only in response to the application of the appropriate control voltage. Both versions are manually reset.

Operation

The Type WL-2 is a two position device having manual operation to the "reset" position and electric trip (spring operated) to the "trip" position. The escutcheon is marked "trip" and "reset". This device can be supplied as either (1) handle trip and electrical trip, or (2) handle reset and both handle and electric trip. The rotor is held in the reset (normal) position by means of a permanent magnet. Tripping is accomplished by energizing the release coil, which induces a magnetic field in opposition to the holding magnet (electromagnetic induction) thus canceling the lines of force of the magnet which releases the rotor to turn to the "trip" position under spring stored energy.

Trip Coil

Magnetic Assemblies are available for a wide range of operating voltages. Refer to chart on Page 52.

The permanent magnet has a minimum holding force of at least double the tripping spring pressure. Therefore, the reserve force of the magnet is sufficient to hold the rotor in reset position under conditions of shock and vibration normally found in commercial application.

The trip coil is factory wired to a coil cutoff contact. In all cases, this coil cutoff contact is closed when the rotor is in the reset position. In the tripping sequence, the coil cutoff contact is opened as the rotor moves from the "reset" to the "trip" position.

The trip coil of the type WL-2 switch has a low continuous rating of 45mA maximum. This rating permits sufficient current flow for monitoring without overheating the coil or tripping the unit.

The coil and permanent magnet are encapsulated in an electrical grade epoxy composition forming an hermetically sealed unit. The encapsulated unit is not affected by repeated thermal cycling between -40 degrees Centigrade and 125 degrees Centigrade.

The hydrolitic stability of this encapsulant is excellent, having experienced no adverse effects after prolonged exposure to high temperature, high humidity conditions.

The coil cannot be replaced separately. Due to the nature of construction, the coil-magnet assembly must be replaced as a unit. Each coil-magnet assembly is factory tested for polarity and only the positive lead is marked showing polarity.

Due to the necessity of maintaining a safe ratio between the permanent magnet holding force and the tripping spring pressure, the WL-2 switch is designed for a maximum of 38 "make" contacts, i.e., contacts closed in the trip position. Since the unit is hand reset, a greater number of contacts can be closed in the "reset" position.

Contacts

The design has been limited to 8 stages of the six contact frame and 6 stages of the twelve contact frame.

On each switch, certain contacts are used for trip coil circuitry. Thus, on control voltages of 24 volts through 250 volts, one contact is used for trip coil cutoff. For 440 volt control, two contacts are wired in series for trip coil cutoff.

On the first stage of each switch, a second contact is used to connect the positive lead from the trip coil. The terminals of this contact are connected by means of an external connector which bears a positive (+) sign. (Disregard for ac control voltage.) In the case of the six contact stage, the factory will connect the coil leads to terminals A-5 and A-7, with A-7 being the positive (+) side. Customer connections are made at terminals B-5 and B-7, B-7 being the positive side (See wiring diagram.) In the case of the twelve contact stages, the factory will connect the coil leads to terminals A-6 and A-8 with A-8 being the positive (+) side. Customer connections are made at terminals B-6 and B-8, B-8 being the positive side. Factory wiring need not be disturbed to accomplish field connections.

The Type WL-2 switch is not available with all contacts normally closed or all normally open. Due to the nature of the design, there is a combination of both normally open and normally closed contacts on each unit. They may be varied to best suit the intended application. (Refer to contact tabulation section - Pages 53-55)

Rectifier

An optional feature of the WL-2 switch is a rectifier. The rectifier can only be used on 110 volts and 220 volts ac. It is used to decrease the operating time of the switch where only alternating current is available for control. (See operating times in coil operating characteristics below.)

The rectifier is factory mounted and wired within the control mechanism housing. The addition of a rectifier does not in any way alter the wiring connection as shown in the wiring diagrams.

Rectifiers for 480 vac control are not available.

Where required for 480ac, the rectifier must be supplied and mounted by the customer.

Handles

All styles listed in this bulletin include an oval handle considered standard for this application. Other handle shapes available upon request are round, pistol grip, and large pistol grip. With each switch there is sufficient hardware (#8-32 hexagon nuts) for each terminal of the unit for use in making field wiring connections.

Nameplates

The Type WL-2 switch is supplied with a white nameplate (escutcheon) as standard. The Type WL-2 switch can be supplied with target indicator but that is considered unnecessary because the size of the standard handle will provide positive visual indications of the switch position. The standard nameplate is shown on Page 56.

COIL OPERATING CHARACTERISTICS

NOMINAL OPERATING VOLTAGE	AVERAGE COIL CURRENT	INDUCTANCE (H)	RESISTANCE (Ω)	IMPEDANCE (Ω)	MINIMUM PICK UP	OPERATING TIME AVERAGE	
						CYCLES	mSEC
24vdc	3.6A	.0029	6.6		19vdc	1.06	17.7
48vdc	7.3A	.0029	6.6		19vdc	.96	16.0
125vdc	1.2A	.030	104		90vdc	1.05	17.5
250vdc	2.4A	.030	104		90vdc	1.01	16.8
120vac	1.4A	.030		85	90vac	1.58	26.3
120vac rectified	1.4A	.030		85	90vac	1.08	18.0
240vac	3.0A	.030		80	90vac	1.54	25.7
240vac rectified	3.0A	.030		80	90vac	1.05	17.5
480vac	6.0A	.030		80	90vac	1.50	25.0

CONTACT RATINGS

VOLTAGE	SINGLE CONTACT								TWO CONTACTS IN SERIES							
	INDUCTIVE AMPERES							RESISTIVE AMPS	INDUCTIVE AMPERES							RESISTIVE AMPS
	4.5mH	12mH	31mH	63mH	130mH	243mH			4.5mH	12mH	31mH	63mH	130mH	243mH		
125vdc	4.65	3.67	2.85	2.1	1.53	0.9		7.55	27.0	14.75	7.7	4.85	2.92	1.9		7.8
250vdc	1.6	1.6	1.0	1.0	0.98	0.78		1.6	6.4	5.0	3.85	3.1	2.4	1.6		6.7
500vdc									1.5	1.7	1.5	1.35	1.15	0.98		1.7
120vac							7.53	7.95							68.0	
240vac							1.16	1.95							9.1	9.0
480vac							.54	.9							1.5	1.55



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Switch Style Numbers

Fig.	No. of Stages	Contacts Available		No. of Paired * Contacts	Switch Styles				Non-Handle Trip																
		NO	NC		Handle Trip 24-48V Dc		120-240V 60Hz With Rectifier		120-240V 60Hz 125-250V Dc		24-48V Dc		120-240V 60Hz With Rectifier		120-240V 60Hz 125-250V Dc										
					Six (6) Contact Frame WL-2 Switches								Twelve (12) Contact Frame WL-2 Switches												
1	1	2	2	1	796A201G01	796A201G03	796A201G05	796A201G07	796A201G02	796A201G04	796A201G06	796A201G08	22	7	14	26	13	796A220G01	796A220G03	796A220G05	796A220G07	796A220G02	796A220G04	796A220G06	796A220G08
2	2	4	6	3	796A205G01	796A205G03	796A205G05	796A205G07	796A205G02	796A205G04	796A205G06	796A205G08	23	7	16	24	13	796A243G01	796A243G03	796A243G05	796A243G07	796A243G02	796A243G04	796A243G06	796A243G08
3	2	6	4	3	796A204G01	796A204G03	796A204G05	796A204G07	796A204G02	796A204G04	796A204G06	796A204G08	24	7	18	22	13	796A242G01	796A242G03	796A242G05	796A242G07	796A242G02	796A242G04	796A242G06	796A242G08
4	3	6	10	5	796A210G01	796A210G03	796A210G05	796A210G07	796A210G02	796A210G04	796A210G06	796A210G08	25	7	20	20	13	796A241G01	796A241G03	796A241G05	796A241G07	796A241G02	796A241G04	796A241G06	796A241G08
5	3	8	8	5	796A208G01	796A208G03	796A208G05	796A208G07	796A208G02	796A208G04	796A208G06	796A208G08	26	7	22	18	13	796A230G01	796A230G03	796A230G05	796A230G07	796A230G02	796A230G04	796A230G06	796A230G08
6	3	10	6	5	796A209G01	796A209G03	796A209G05	796A209G07	796A209G02	796A209G04	796A209G06	796A209G08	27	7	24	16	13	796A229G01	796A229G03	796A229G05	796A229G07	796A229G02	796A229G04	796A229G06	796A229G08
7	4	8	14	7	796A212G01	796A212G03	796A212G05	796A212G07	796A212G02	796A212G04	796A212G06	796A212G08	28	7	26	14	13	796A219G01	796A219G03	796A219G05	796A219G07	796A219G02	796A219G04	796A219G06	796A219G08
8	4	10	12	7	796A202G01	796A202G03	796A202G05	796A202G07	796A202G02	796A202G04	796A202G06	796A202G08	29	8	16	30	15	796A222G01	796A222G03	796A222G05	796A222G07	796A222G02	796A222G04	796A222G06	796A222G08
9	4	12	10	7	796A213G01	796A213G03	796A213G05	796A213G07	796A213G02	796A213G04	796A213G06	796A213G08	30	8	18	28	15	796A248G01	796A248G03	796A248G05	796A248G07	796A248G02	796A248G04	796A248G06	796A248G08
10	4	14	8	7	796A211G01	796A211G03	796A211G05	796A211G07	796A211G02	796A211G04	796A211G06	796A211G08	31	8	20	26	15	796A247G01	796A247G03	796A247G05	796A247G07	796A247G02	796A247G04	796A247G06	796A247G08
11	5	10	18	9	796A215G01	796A215G03	796A215G05	796A215G07	796A215G02	796A215G04	796A215G06	796A215G08	32	8	22	24	15	796A246G01	796A246G03	796A246G05	796A246G07	796A246G02	796A246G04	796A246G06	796A246G08
12	5	12	16	9	796A225G01	796A225G03	796A225G05	796A225G07	796A225G02	796A225G04	796A225G06	796A225G08	33	8	24	22	15	796A223G01	796A223G03	796A223G05	796A223G07	796A223G02	796A223G04	796A223G06	796A223G08
13	5	14	14	9	796A200G01	796A200G03	796A200G05	796A200G07	796A200G02	796A200G04	796A200G06	796A200G08	34	8	26	20	15	796A245G01	796A245G03	796A245G05	796A245G07	796A245G02	796A245G04	796A245G06	796A245G08
14	5	16	12	9	796A224G01	796A224G03	796A224G05	796A224G07	796A224G02	796A224G04	796A224G06	796A224G08	35	8	28	18	15	796A244G01	796A244G03	796A244G05	796A244G07	796A244G02	796A244G04	796A244G06	796A244G08
15	5	18	10	9	796A214G01	796A214G03	796A214G05	796A214G07	796A214G02	796A214G04	796A214G06	796A214G08	36	8	30	16	15	796A221G01	796A221G03	796A221G05	796A221G07	796A221G02	796A221G04	796A221G06	796A221G08
Wiring Diagram—Figures					A	A	A	C	A	A	A	C	Wiring Diagram—Figures												
37	1	5	4	4	796A231G01	796A231G03	796A231G05	796A231G07	796A231G02	796A231G04	796A231G06	796A231G08	B	B	B	D	B	B	B	D					
33	2	11	10	10	796A232G01	796A232G03	796A232G05	796A232G07	796A232G02	796A232G04	796A232G06	796A232G08													
39	3	17	16	16	796A233G01	796A233G03	796A233G05	796A233G07	796A233G02	796A233G04	796A233G06	796A233G08													
40	4	23	22	22	796A234G01	796A234G03	796A234G05	796A234G07	796A234G02	796A234G04	796A234G06	796A234G08													
41	5	29	28	28	796A235G01	796A235G03	796A235G05	796A235G07	796A235G02	796A235G04	796A235G06	796A235G08													
42	6	35	34	34	796A236G01	796A236G03	796A236G05	796A236G07	796A236G02	796A236G04	796A236G06	796A236G08													

* A pair of contacts are those having adjacent stationary terminals served by the same moving contact. When the interrupted current of a normally closed contact exceeds the rating listed for single contacts on page 51, the adjacent "make" contacts should not be used. This column indicates the number of these pairs per switch.

Wiring Diagrams – 24 Thru 250 Volts

480 Volts – Two Coil Cutoff Contacts Wired in Circuit

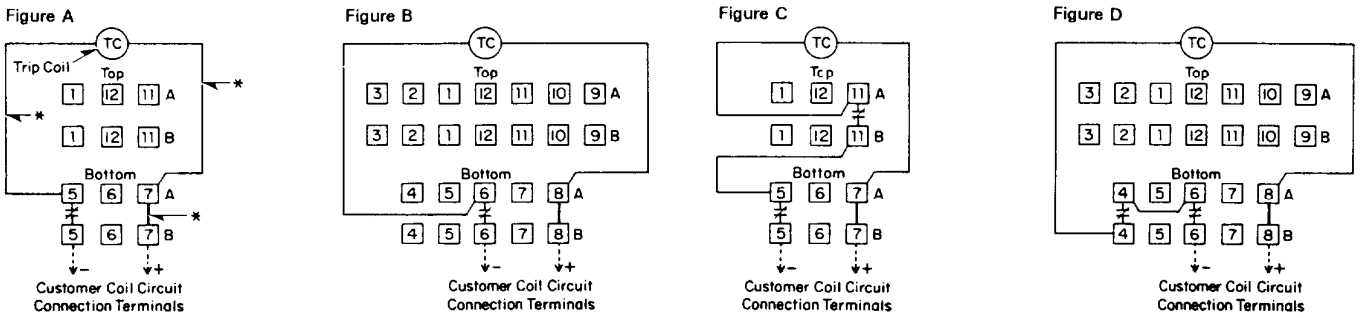


Figure A
Six Contact Frame
* Factory Installed Connectors

Figure B
Twelve Contact Frame

Figure C
Six Contact Frame

Figure D
Twelve Contact Frame

WL-2 Contact Developments, continued

Figure 31

CONTACT	POSITION		
	T	INT	R
A11-B11			X
A12-B12	X		
A1-B1		X	
A5-B5		X	
A6-B6	X		
C11-D11	X		
C12-D12		X	
C1-D1	X		
C5-D5	X		
C6-D6		X	
C7-D7	X		
E11-F11	X		
E12-F12		X	
E1-F1	X		
E5-F5	X		
E6-F6		X	
E7-F7	X		
G11-H11	X		
G12-H12		X	
G1-H1	X		
G5-H5	X		
G6-H6	X		
G7-H7	X		
I11-J11	X		
I12-J12		X	
I1-J1	X		
I5-J5	X		
I6-J6	X		
I7-J7	X		
K11-L11	X		
K12-L12		X	
K1-L1	X		
K5-L5	X		
K6-L6	X		
K7-L7	X		
M11-N11	X		
M12-N12		X	
M1-N1	X		
M5-N5	X		
M6-N6	X		
M7-N7	X		
O11-P11	X		
O12-P12		X	
O1-P1	X		
O5-P5	X		
O6-P6	X		
O7-P7	X		

Figure 32

CONTACT	POSITION		
	T	INT	R
A11-B11			X
A12-B12	X		
A1-B1		X	
A5-B5		X	
A6-B6	X		
C11-D11	X		
C12-D12		X	
C1-D1	X		
C5-D5	X		
C6-D6		X	
C7-D7	X		
E11-F11	X		
E12-F12		X	
E1-F1	X		
E5-F5	X		
E6-F6		X	
E7-F7	X		
G11-H11	X		
G12-H12		X	
G1-H1	X		
G5-H5	X		
G6-H6	X		
G7-H7	X		
I11-J11	X		
I12-J12		X	
I1-J1	X		
I5-J5	X		
I6-J6	X		
I7-J7	X		
K11-L11	X		
K12-L12		X	
K1-L1	X		
K5-L5	X		
K6-L6	X		
K7-L7	X		
M11-N11	X		
M12-N12		X	
M1-N1	X		
M5-N5	X		
M6-N6	X		
M7-N7	X		
O11-P11	X		
O12-P12		X	
O1-P1	X		
O5-P5	X		
O6-P6	X		
O7-P7	X		

Figure 33

CONTACT	POSITION		
	T	INT	R
A11-B11			X
A12-B12	X		
A1-B1		X	
A5-B5		X	
A6-B6	X		
C11-D11	X		
C12-D12		X	
C1-D1	X		
C5-D5	X		
C6-D6		X	
C7-D7	X		
E11-F11	X		
E12-F12		X	
E1-F1	X		
E5-F5	X		
E6-F6		X	
E7-F7	X		
G11-H11	X		
G12-H12		X	
G1-H1	X		
G5-H5	X		
G6-H6	X		
G7-H7	X		
I11-J11	X		
I12-J12		X	
I1-J1	X		
I5-J5	X		
I6-J6	X		
I7-J7	X		
K11-L11	X		
K12-L12		X	
K1-L1	X		
K5-L5	X		
K6-L6	X		
K7-L7	X		
M11-N11	X		
M12-N12		X	
M1-N1	X		
M5-N5	X		
M6-N6	X		
M7-N7	X		
O11-P11	X		
O12-P12		X	
O1-P1	X		
O5-P5	X		
O6-P6	X		
O7-P7	X		

Figure 34

CONTACT	POSITION		
	T	INT	R
A11-B11			X
A12-B12	X		
A1-B1		X	
A5-B5		X	
A6-B6	X		
C11-D11	X		
C12-D12		X	
C1-D1	X		
C5-D5	X		
C6-D6		X	
C7-D7	X		
E11-F11	X		
E12-F12		X	
E1-F1	X		
E5-F5	X		
E6-F6		X	
E7-F7	X		
G11-H11	X		
G12-H12		X	
G1-H1	X		
G5-H5	X		
G6-H6	X		
G7-H7	X		
I11-J11	X		
I12-J12		X	
I1-J1	X		
I5-J5	X		
I6-J6	X		
I7-J7	X		
K11-L11	X		
K12-L12		X	
K1-L1	X		
K5-L5	X		
K6-L6	X		
K7-L7	X		
M11-N11	X		
M12-N12		X	
M1-N1	X		
M5-N5	X		
M6-N6	X		
M7-N7	X		
O11-P11	X		
O12-P12		X	
O1-P1	X		
O5-P5	X		
O6-P6	X		
O7-P7	X		

Figure 35

CONTACT	POSITION		
	T	INT	R
A11-B11			X
A12-B12	X		
A1-B1		X	
A5-B5		X	
A6-B6	X		
C11-D11	X		
C12-D12		X	
C1-D1	X		
C5-D5	X		
C6-D6		X	
C7-D7	X		
E11-F11	X		
E12-F12		X	
E1-F1	X		
E5-F5	X		
E6-F6		X	
E7-F7	X		
G11-H11	X		
G12-H12		X	
G1-H1	X		
G5-H5	X		
G6-H6	X		
G7-H7	X		
I11-J11	X		
I12-J12		X	
I1-J1	X		
I5-J5	X		
I6-J6	X		
I7-J7	X		
K11-L11	X		
K12-L12		X	
K1-L1	X		
K5-L5	X		
K6-L6	X		
K7-L7	X		
M11-N11	X		
M12-N12		X	
M1-N1	X		
M5-N5	X		
M6-N6	X		
M7-N7	X		
O11-P11	X		
O12-P12		X	
O1-P1	X		
O5-P5	X		
O6-P6	X		
O7-P7	X		

Figure 36

CONTACT	POSITION		
	T	INT	R
A11-B11			X
A12-B12	X		
A1-B1		X	
A5-B5		X	
A6-B6	X		
C11-D11	X		
C12-D12		X	
C1-D1	X		
C5-D5	X		
C6-D6		X	
C7-D7	X		
E11-F11	X		
E12-F12		X	
E1-F1	X		
E5-F5	X		
E6-F6		X	
E7-F7	X		
G11-H11	X		
G12-H12		X	
G1-H1	X		
G5-H5	X		
G6-H6	X		
G7-H7	X		
I11-J11	X		
I12-J12		X	
I1-J1	X		
I5-J5	X		
I6-J6	X		
I7-J7	X		
K11-L11	X		
K12-L12		X	
K1-L1	X		
K5-L5	X		
K6-L6	X		
K7-L7	X		
M11-N11	X		
M12-N12		X	
M1-N1	X		
M5-N5	X		
M6-N6	X		
M7-N7	X		
O11-P11	X		
O12-P12		X	
O1-P1	X		
O5-P5	X		
O6-P6	X		
O7-P7	X		

Figure 37

CONTACT	POSITION		
	T	INT	R
A11-B11	X		
A12-B12		X	
A1-B1	X		
A2-B2		X	
A3-B3	X		
A4-B4		X	
A6-B6	X		
A7-B7	X		
A9-B9	X		
A10-B10		X	
C11-D11	X		
C12-D12		X	
C1-D1	X		
C2-D2		X	
C3-D3	X		
C4-D4		X	
C5-D5	X		
C6-D6		X	
C7-D7	X		
C8-D8		X	
C9-D9	X		
C10-D10		X	

Figure 38

CONTACT	POSITION		
	T	INT	R
A11-B11	X		
A12-B12		X	
A1-B1	X		
A2-B2		X	
A3-B3	X		
A4-B4		X	
A6-B6	X		
A7-B7	X		
A9-B9	X		
A10-B10		X	
C11-D11	X		
C12-D12		X	
C1-D1	X		
C2-D2		X	
C3-D3	X		
C4-D4		X	
C5-D5	X		
C6-D6		X	
C7-D7	X		
C8-D8		X	
C9-D9	X		
C10-D10		X	

* 2nd Stage Shown

Figure 39

CONTACT	POSITION		
	T	INT	R
A11-B11	X		
A12-B12		X	
A1-B1	X		
A2-B2		X	
A3-B3	X		
A4-B4		X	
A6-B6	X		
A7-B7	X		
A9-B9	X		
A10-B10		X	
C11-D11	X		
C12-D12		X	
C1-D1	X		
C2-D2		X	
C3-D3	X		
C4-D4		X	
C5-D5	X		
C6-D6		X	
C7-D7	X		
C8-D8		X	
C9-D9	X		
C10-D10		X	

* 2nd Stage Shown
3rd Stage (E-F) is Same

Figure 40

CONTACT	POSITION		
	T	INT	R
A11-B11	X		
A12-B12		X	
A1-B1	X		
A2-B2		X	
A3-B3	X		
A4-B4		X	
A6-B6	X		
A7-B7	X		
A9-B9	X		
A10-B10		X	
C11-D11	X		
C12-D12		X	
C1-D1	X		
C2-D2		X	
C3-D3	X		
C4-D4		X	
C5-D5	X		
C6-D6		X	
C7-D7	X		
C8-D8		X	
C9-D9	X		
C10-D10		X	

* 2nd Stage Shown
3rd, 4th Stages (E-F, G-H) are Same

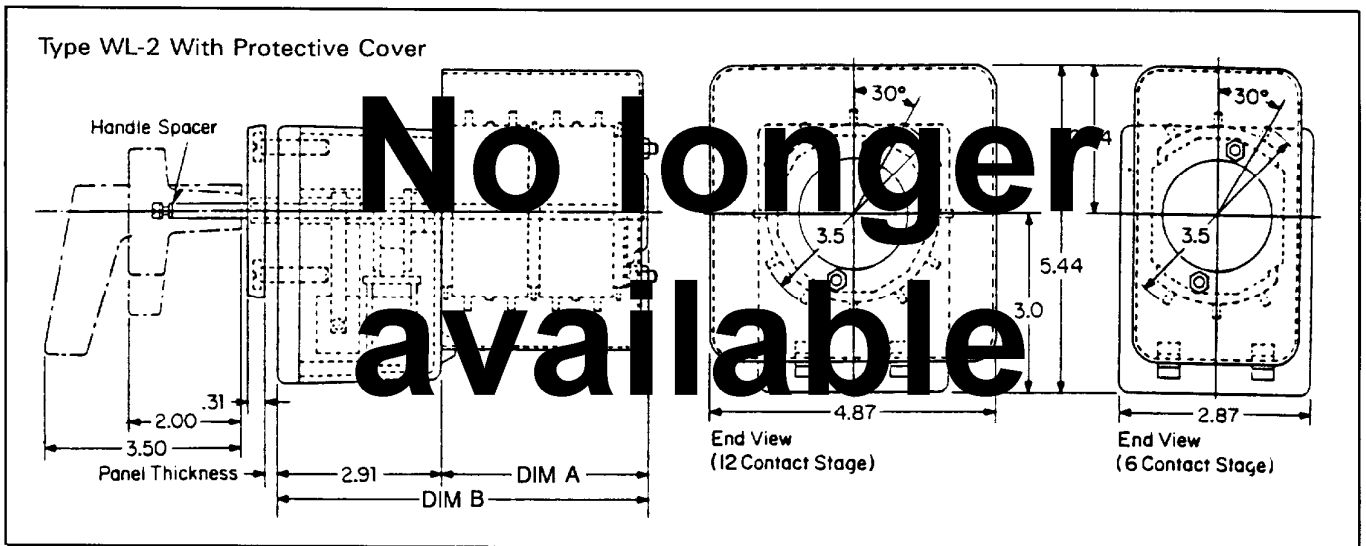
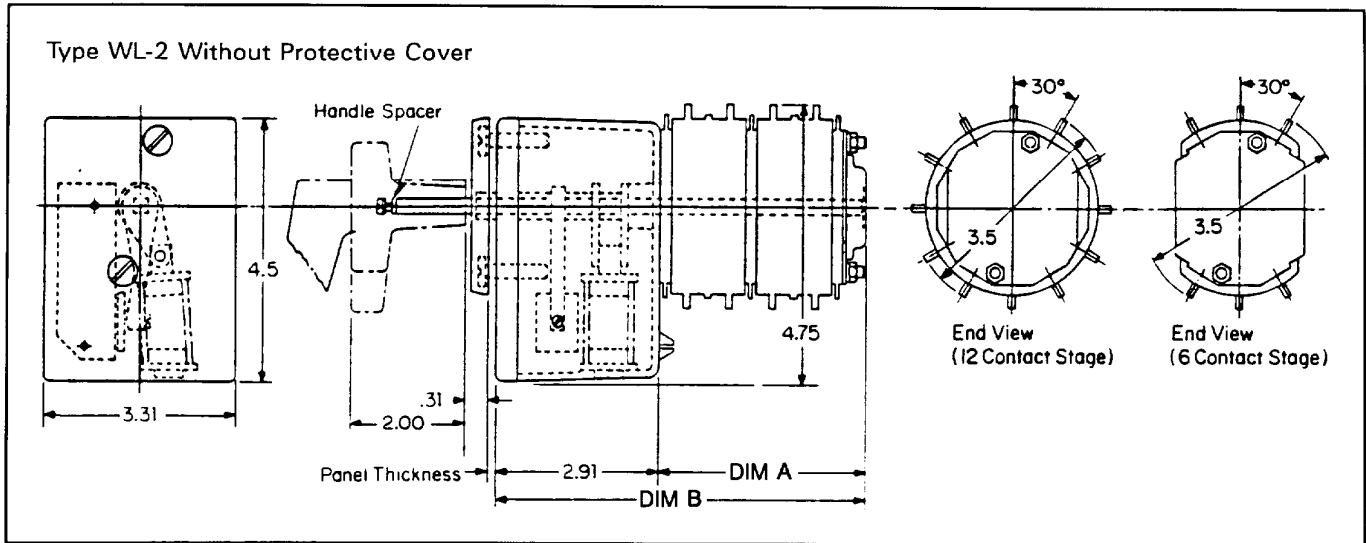
Figure 41

CONTACT	POSITION		
	T	INT	R
A11-B11	X		
A12-B12		X	
A1-B1	X		
A2-B2		X	
A3-B3	X		
A4-B4		X	
A6-B6	X		
A7-B7	X		
A9-B9	X		
A10-B10		X	
C11-D11	X		
C12-D12		X	
C1-D1	X		
C2-D2		X	
C3-D3	X		
C4-D4		X	
C5-D5	X		
C6-D6		X	
C7-D7	X		
C8-D8		X	
C9-D9	X		
C10-D10		X	

* 2nd Stage Shown
3rd, 4th and 5th Stages (E-F, G-H, I-J) are Same

Figure

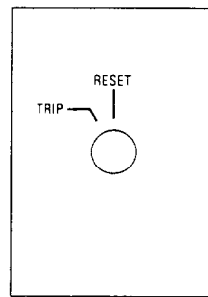
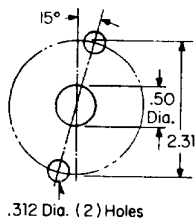
Outline dimensions Type WL-2



Depth Behind Panel

No. of Stage	DIM A	DIM B
1	2.40	5.31
2	3.90	6.81
3	5.40	8.31
4	6.90	9.81
5	8.40	11.31
6	9.90	12.81
7	11.40	14.31
8	12.90	15.81

Dimensions in Inches
Drilling Plan



63F-2X9R

NAMEPLATE

This nameplate comes standard on all WL-2 Lockout Relays

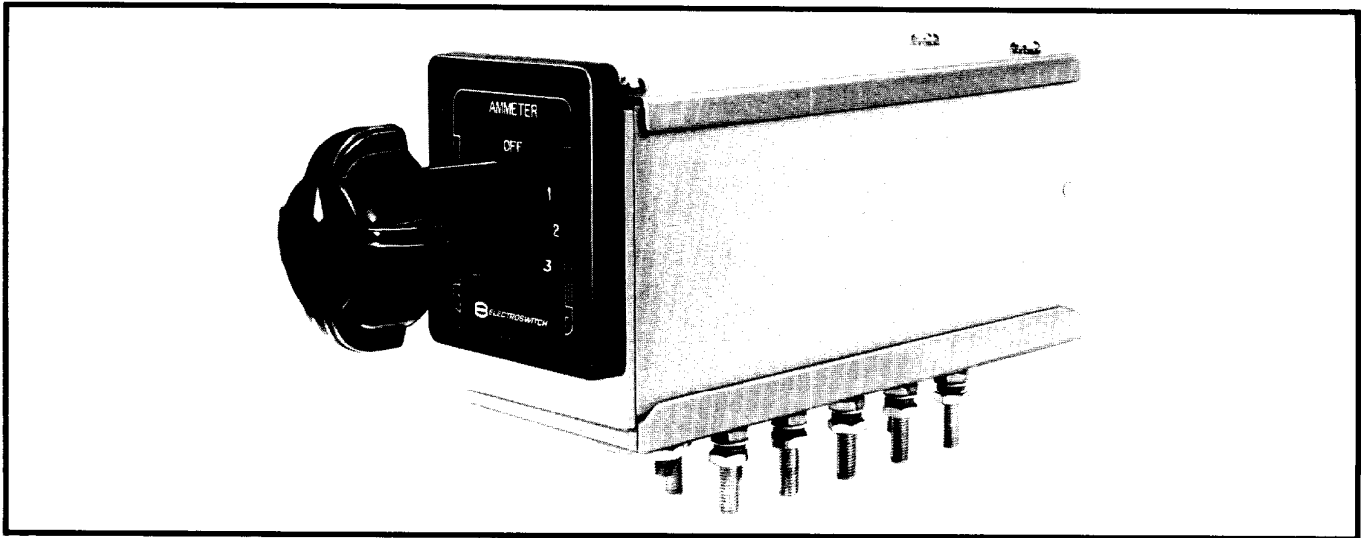
Other engravings are available upon request.

Color - White with black lettering.



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Abstract

The rugged, time-tested design of the Type W switch has made it a standard for reliability in utility applications. The Type W is available with maintained contacts for instrument switch applications, or momentary contacts for control of circuit breakers, motors or other electrically operated devices.

Operation

Circuits to a Type W switch are generally connected from a stud on one side of the terminal base, through a segment on the rotor, to a stud on the other side; this constitutes a single contact, or stage. In the simplest form, a stage is a single-pole, single-throw, double-break contact.

The operating shaft, made of cold-rolled steel rod, rotates in bronze bearings riveted to the end plates. The end plates provide ample support for the base and the zinc plated steel top, which is channel-shaped for strength. This arrangement assures permanent alignment of the contacts.

Both the moving and stationary contacts are faced with a layer of silver to insure low contact resistance throughout the life of the switch.

The moving contacts are separated by spacers of arc resistant moisture-proof material. They are keyed to an insulating tube, which covers the steel operating shaft. Spacers and contacts are securely clamped to the shaft.

The stationary contacts are self-aligning and are made of high conductivity copper alloy. Good contact pressure is obtained by the use of compression springs which do not carry current. This contact construction operates with a wiping action, insuring clean, low-resistance contact, with long life.

Multiple laminated copper shunts conduct the current from the contacts to the terminal studs. These studs are mounted on the terminal base in such a manner that they positively will not turn or become loose.

The terminal base is made of high-grade molded material which has very high mechanical and dielectric strength and is ribbed to give creepage distance between studs. Each stud hole is numbered for terminal identification.

Protective side plates slide into grooves in the top and bottom of the switch to provide immediate access to the contacts for inspection. Operational features such as slip and lateral contacts are available.

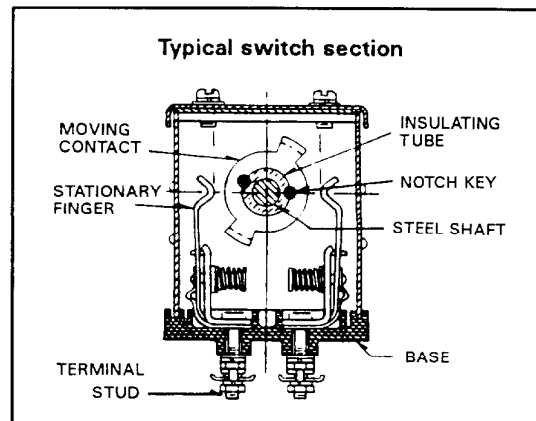
Nameplates

Type W instrument and control switches are supplied with a standard black nameplate which can be engraved to customer requirements. Circuit Breaker Control Switches have a cutout in the nameplate for a red and green target indicator to show the last manual operation of the switch. Special engravings should be indicated clearly at the time of order.

Ratings

Type W switches are insulated for 600 volt service, and have a continuous current-carrying capacity of 20 amperes. The interrupting capacity depends upon voltage, current, and inductance of the circuit controlled.

	Interrupting rating in amperes	
	Inductive	Non-inductive
AC		
125 volt	30	50
250 volt	15	25
600 volt	3	5
DC		
125 volt	4	8
250 volt	1	2
600 volt	0.2	0.5



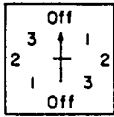
Typical Applications

The Type W switches shown below are a sample of the many styles available. For other applications, complete the Application Worksheet on page 60 and forward to factory.

Ammeter

CONT.	POSITION			
	OFF	1	2	3
2-1	X		X	X
2-4		X		
1-3		X		
6-5	X	X	X	
6-4				X
5-3				X
8-7	X	X		X
8-10			X	
7-9			X	

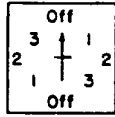
3CT's - Independent Circuits
Style No. 8320A64G01
Handle: Modern round fixed
Contacts: Maintained
Stages: Five
Mounting: 1/8 - 1/4
Target: No



Voltmeter

CONT.	POSITION			
	OFF	1	2	3
1-2		X		X
3-4		X		
5-6			X	
7-8			X	X

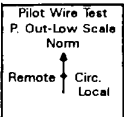
3 Phase - 3 Wire
Style No. 8320A68G01
Handle: Modern round fixed
Contacts: Maintained
Stages: Four
Mounting: 1/8 - 1/4
Target: No



Pilot Wire Test

CONT.	REM	REM P.O.	POSITION				LOCAL P.O.	
			NORM	NORM P.O.	CIRC	CIRC P.O.		
7-8	X	X					X	X
9-10			X	X			X	X
11-12	X	X	X	X	X	X	X	X
13-14	X		X		X		X	
15-16		X	X		X		X	

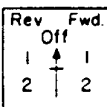
Style No. 8335A39G01
(was 149162B)
Handle: Modern Pistol Grip
Contacts: Momentary
Stages: Five
Mounting: 1/8 - 1/4
Target: No



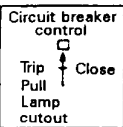
Motor Control

CONT.	POSITION				
	REV		OFF	FWD.	
	2	1		1	2
1-2			X		
3-4	X	X		X	X
5-6				X	X
7-8	X	X			
9-10	X				X
11-12			X		

Style No. 8330A44G01
Handle: Heavy duty oval
Contacts: Maintained
Stages: Six
Mounting: 1/8 - 1/4
Target: No



Circuit Breaker Control



CONT.	PULL OUT	TRIP	POSITION		
			OFF	AFTER TRIP	AFTER CLOSE
1-2					
3-4	X	X			X
5-6		X	X	X	X
7-8			X	X	
9-10			X	X	
11-12				X	X
13-14				X	X

Style No. 8328A86G01
Handle: Modern Pistol Grip
Contacts: Momentary
Stages: Seven
Mounting: 1/8 - 1/4
Target: Yes

CONTACT	PULL OUT	TRIP	POSITIONS		
			OFF	AFTER TRIP	AFTER CLOSE
1-2					X
3-4	X	X			
5-6		X	X	X	X
7-8			X	X	
9-10			X	X	
11-12				X	X
13-14				X	X
15-16				X	X
17-18				X	X
19-20				X	X

Style No. 8328A94G01
Handle: Modern Pistol Grip
Contacts: Momentary
Stages: Eight
Mounting: 1/8 - 1/4
Target: Yes

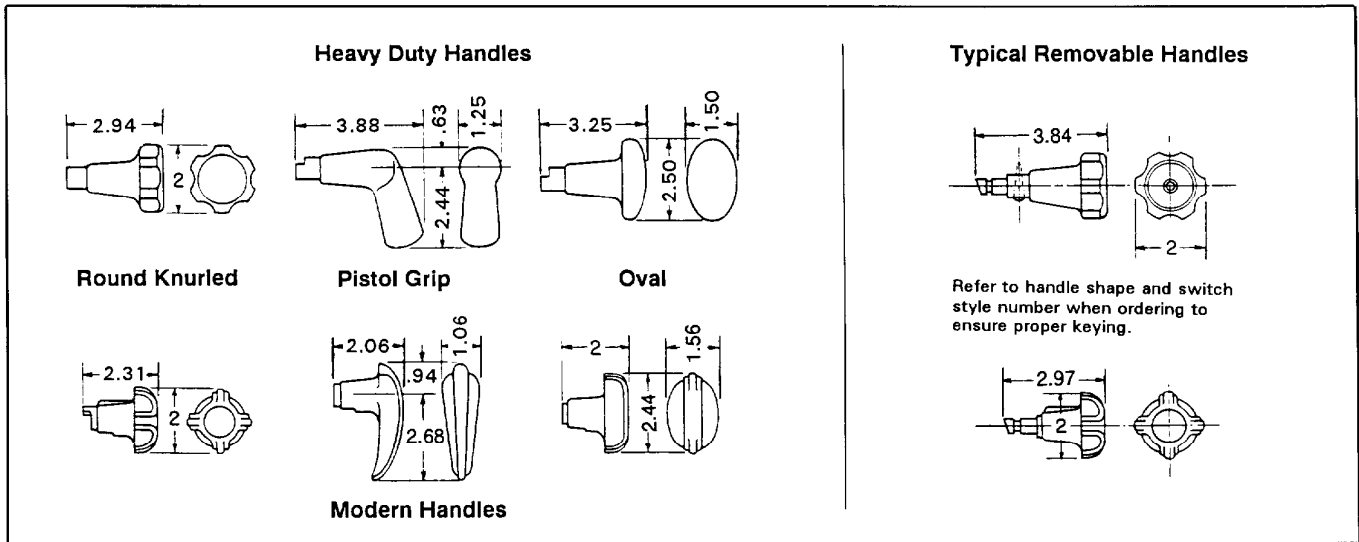
CONTACT	PULL OUT	TRIP	POSITIONS		
			OFF	AFTER TRIP	AFTER CLOSE
1-2					X
3-4	X	X			
5-6		X	X	X	X
7-8			X	X	
9-10			X	X	
11-12				X	X
13-14				X	X
15-16				X	X
17-18				X	X
19-20				X	X

Style No. 8330A70G01
Handle: Modern Pistol Grip
Contacts: Momentary
Stages: Ten
Mounting: 1/8 - 1/4
Target: Yes

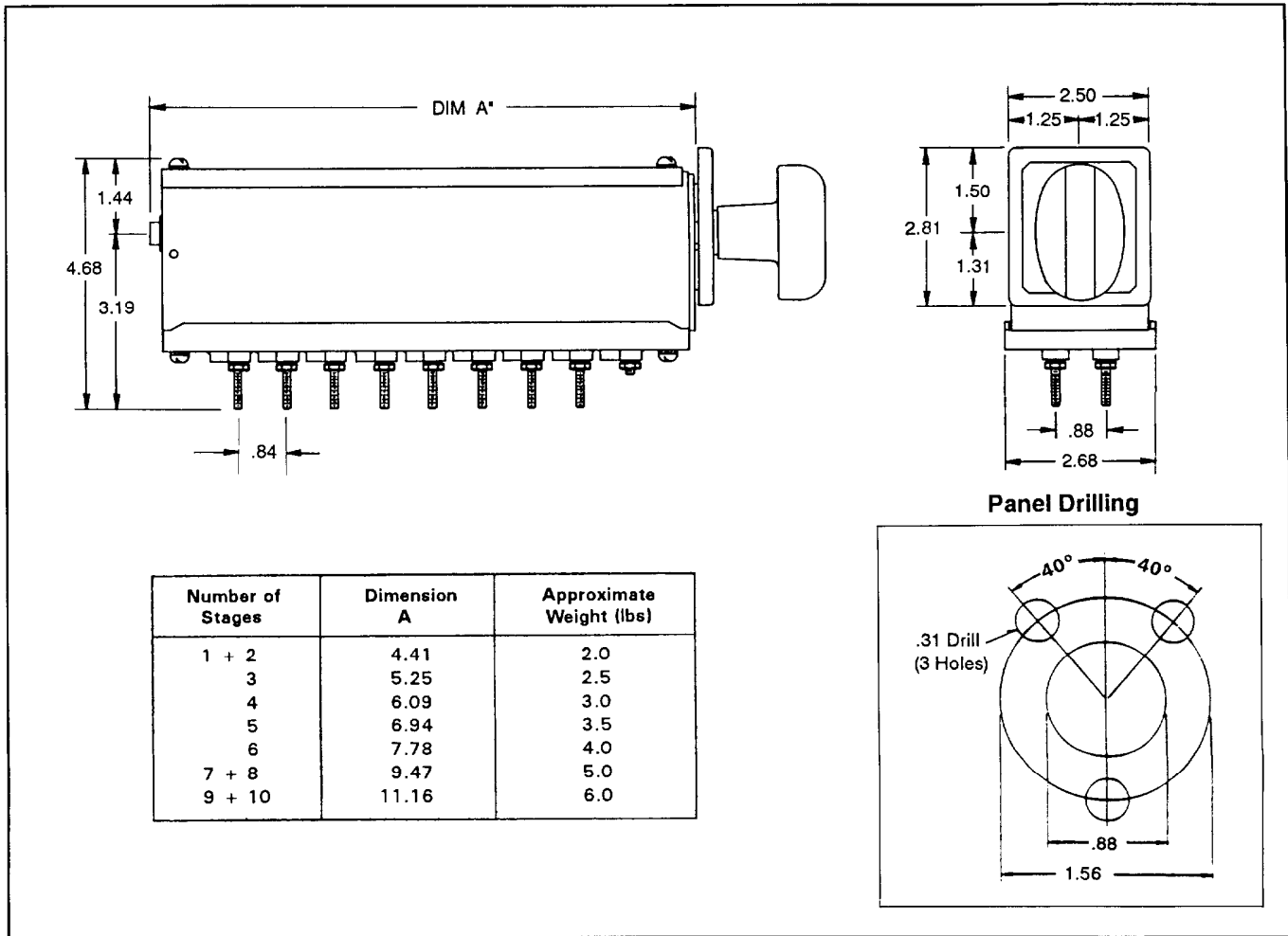
POSITION ANGLES 60° is the standard indexing angle. 30°, 36°, 45° and 90° are also available

HANDLES Type W Switches are supplied with black molded handles. These handles are an integral part of the stop mechanism for position limiting of the switch. Therefore,

when ordering handles it is important to specify the style number of the switch the handle is to be used on.



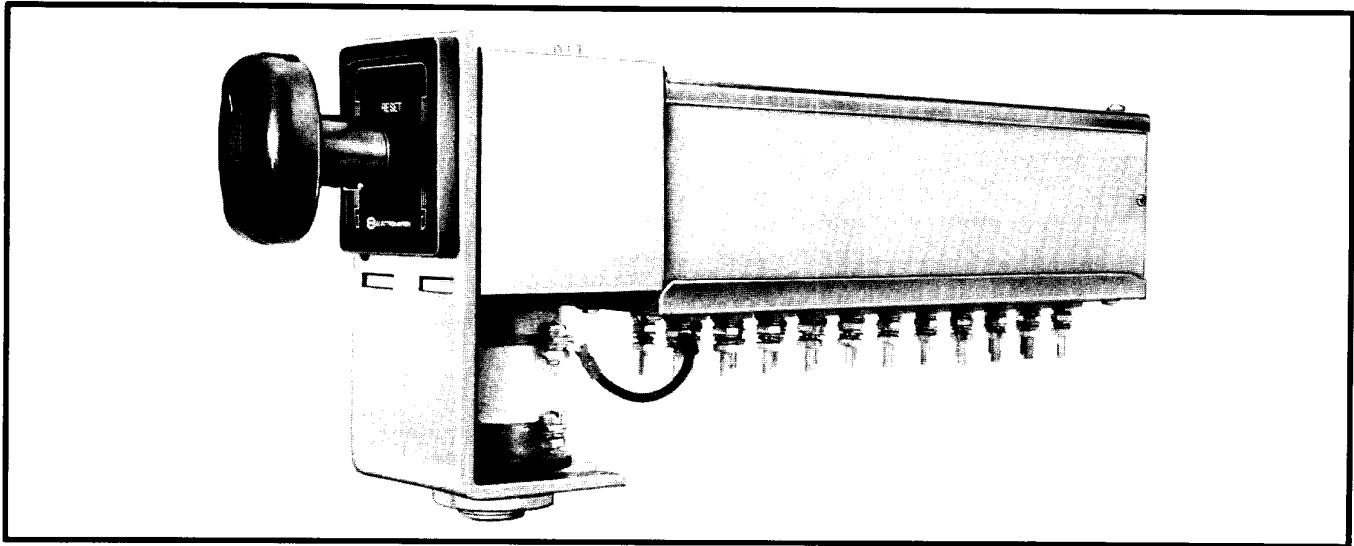
Outline and Mounting Dimensions



Type WL

Lock-Out Relay

600 Volts, 20 Amperes
Continuous Rating



Abstract

The Type WL Lockout Relay is a control relay primarily used in applications requiring the simultaneous operation of a large number of contacts. The Type WL is available in two versions, a "handle trip" unit, which can be tripped manually or electrically or a "non-handle trip" unit, which will trip only in response to the application of the appropriate control voltage. Both versions are manually reset.

Operation

The Type WL is a two position device supplied with a nameplate marked "TRIP" and "RESET" as shown on Page 63.

The rotor is held in the "reset" or normal position by means of a latch lever. The latch lever incorporates a roller which engages a holding cam that is secured to the rotor shaft. In the "reset" position the rotor is under torsion spring stored energy and remains in this position until the solenoid is energized. Upon energizing the solenoid coil, the plunger travels upward and actuates the latch lever causing the latch to pivot away from the holding cam allowing the torsion spring to move the rotor counterclockwise sixty (60) degrees to the "trip" position.

When the switch is tripped, the unit must be hand reset by turning the handle sixty (60) degrees clockwise until the holding cam strikes the position stop. When the rotor is turned to the full reset position, the latch lever, under spring pressure, will move into latching position. When the handle pressure is released, the latch roller will engage the holding cam thus retaining a positive "reset" position.

If the handle is not turned to the full reset position, the latch roller will not engage the holding cam and the rotor will return to the full "trip" position. The reset operation must then be physically repeated.

Contacts

In the Type WL Switch one stage constitutes one circuit (one double series break contact) made up of two stationary contact fingers and one moving contact segment. The stationary contact fingers of a given stage are secured to a molded base of insulating material of high di-electric strength by studs which pass through the molded base and serve as terminals for circuit connections. The stationary contact fingers are mounted 180 degrees apart in an opposing manner.

The maximum number of stages is ten (10).

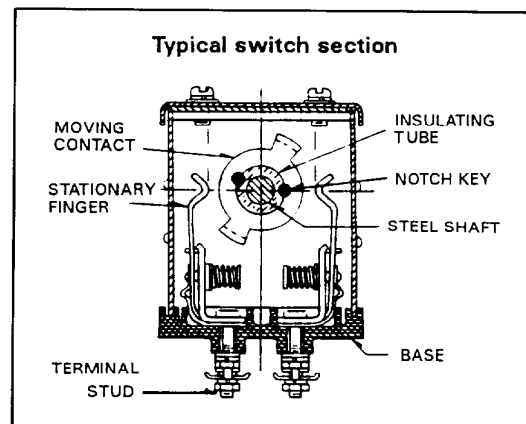
Coils

A variety of trip coils for both DC and AC control voltages are available. Refer to Table II, page 62 for part numbers. Coils are supplied installed from the factory when ordered with a WL Relay.

Ratings

Type WL switches are insulated for 600 volt service, and have a continuous current-carrying capacity of 20 amperes. The interrupting capacity depends upon voltage, current, and inductance of the circuit controlled.

Interrupting rating in amperes		
	Inductive	Non-inductive
AC		
125 volt	30	50
250 volt	15	25
600 volt	3	5
DC		
125 volt	4	8
250 volt	1	2
600 volt	0.2	0.5



HOW TO ORDER

Choose the style number from Table I by appropriate contacting, Handle or Non Handle trip, and Handle style.

Specify coil required from Table II.

Switches with Heavy Duty Handles can be mounted on panels up to 2 inches thick by changing the mounting screw length. Switches with Modern Handles can be mounted on panels up to 1/8 inch thick.

TABLE I: WL SWITCH STYLES (less coils)

No. of Stages	Style Numbers Without Coils				Rotor Contacts													
	Modern Handle		Heavy-Duty Handle		Coil	A = Contact Open in Reset. Closed in Trip Position. N.O. B = Contact Closed in Reset. Open in Trip Position. N.C.												
	Non-Trip By Handle	Trip By Handle	Non-Trip By Handle	Trip By Handle		1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20			
2	422D949G01	422D950G01	422D949G08	422D950G08	B	A	A											
3	422D949G02	422D950G02	422D949G09	422D950G09	B	A	A											
4	422D949G03	422D950G03	422D949G10	422D950G10	B	A	A	A										
5	422D949G04	422D950G04	422D949G11	422D950G11	B	A	A	A	A									
6	422D949G05	422D950G05	422D949G12	422D950G12	B	A	A	A	A									
8	422D949G06	422D950G06	422D949G13	422D950G13	B	A	A	A	A	A								
10	422D949G07	422D950G07	422D949G14	422D950G14	B	A	A	A	A	A								
2	422D949G15	422D950G15	422D949G41	422D950G41	B	B	A											
3	422D949G16	422D950G16	422D949G42	422D950G42	B	B	A	A										
4	422D949G17	422D950G17	422D949G43	422D950G43	B	B	A	A	A									
5	422D949G18	422D950G18	422D949G44	422D950G44	B	B	A	A	A	A								
6	422D949G19	422D950G19	422D949G45	422D950G45	B	B	A	A	A	A								
8	422D949G20	422D950G20	422D949G46	422D950G46	B	B	A	A	A	A								
10	422D949G21	422D950G21	422D949G47	422D950G47	B	B	A	A	A	A								
3	422D949G22	422D950G22	422D949G48	422D950G48	B	B	B	A										
4	422D949G23	422D950G23	422D949G49	422D950G49	B	B	B	A	A									
5	422D949G24	422D950G24	422D949G50	422D950G50	B	B	B	A	A	A								
6	422D949G25	422D950G25	422D949G51	422D950G51	B	B	B	A	A	A	A							
8	422D949G26	422D950G26	422D949G52	422D950G52	B	B	B	A	A	A	A							
10	422D949G27	422D950G27	422D949G53	422D950G53	B	B	B	A	A	A	A							
4	422D949G28	422D950G28	422D949G54	422D950G54	B	B	B	B	A									
5	422D949G29	422D950G29	422D949G55	422D950G55	B	B	B	B	A	A								
6	422D949G30	422D950G30	422D949G56	422D950G56	B	B	B	B	A	A	A							
8	422D949G31	422D950G31	422D949G57	422D950G57	B	B	B	B	A	A	A							
10	422D949G32	422D950G32	422D949G58	422D950G58	B	B	B	B	A	A	A							
5	422D949G33	422D950G33	422D949G59	422D950G59	B	B	B	B	B	A								
6	422D949G34	422D950G34	422D949G60	422D950G60	B	B	B	B	B	A	A							
8	422D949G35	422D950G35	422D949G61	422D950G61	B	B	B	B	B	A	A							
10	422D949G36	422D950G36	422D949G62	422D950G62	B	B	B	B	B	A	A							
6	422D949G37	422D950G37	422D949G63	422D950G63	B	B	B	B	B	B	A							
8	422D949G38	422D950G38	422D949G64	422D950G64	B	B	B	B	B	B	A							
10	422D949G39	422D950G39	422D949G65	422D950G65	B	B	B	B	B	B	A							

① On 250 volts dc control circuits this contact must be connected in series with coil contact.

TABLE II: COIL OPERATING CHARACTERISTICS

Coil part numbers must be specified at the time of order. Those marked with an asterisk (*) are considered to be standard for the operating voltage indicated. These coils should not be used for 5 ampere series trip operation from

secondary of current transformers, as the burden is too great. Time is in milliseconds. Time may vary slightly for AC tripping, depending on point of AC cycles at which the coil is energized.

Code	Coil style number	Direct Current				Alternating Current - 60 Cycles					
		Ohms Resistance	Minimum Trip DC Volts	Control Voltage-DC				Ohms impedance (not tripped)	Minimum trip AC Volts	Control Voltage - AC	
				24	48	125	250			110	220
A	701B500G01	.73	8.7	*16				6.2	50	*16	
B	701B501G01	2.68	17.1		16			21.0	95	19	16
C	701B502G01	4.05	21.4		*17			30.0	115		16
D	701B503G01	6.2	27.0		19	13		43.0	135		*17
E	701B504G01	8.6	31.0			14		52.0	155		18
F	701B505G01	12.2	33.0			14		97.0	200		
G	701B506G01	18.5	44.0			16		140.0	243		
H	701B507G01	28.0	54.0			*17	14	208.0	297		
I	701B508G01	45.5	70.0			19	15				
J	701B509G01	59.0	84.0				*16				
K	701B510G01	104.0	111.0				17				

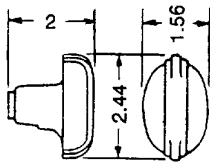


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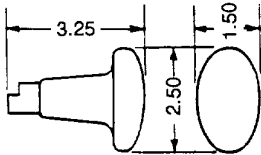
Type WL

HANDLES



MODERN OVAL HANDLE

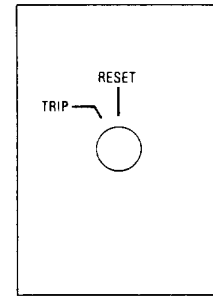
Supplied as standard on Type WL Switches for 1/8 in. panel.



HEAVY DUTY OVAL HANDLE

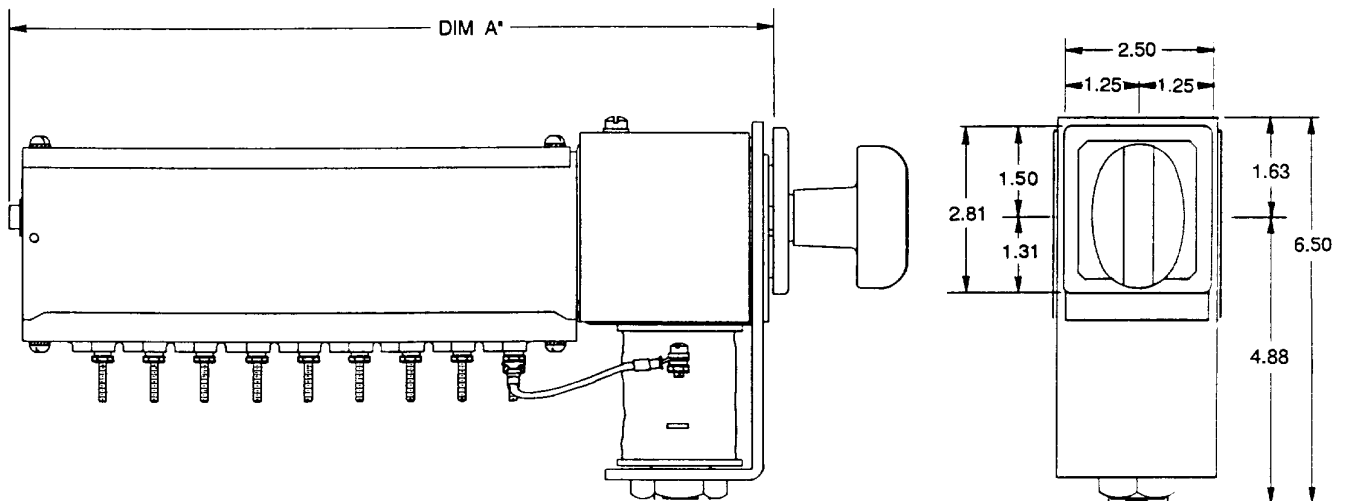
Supplied as standard on Type WL Switches for up to 2 in. panels

NAMEPLATE

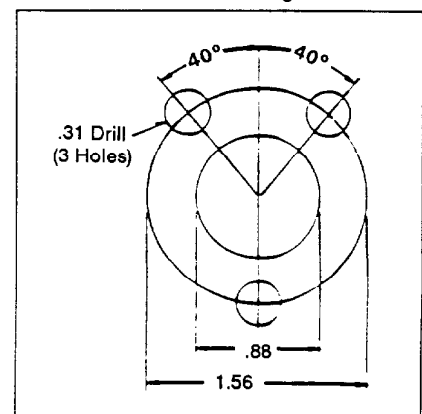


This nameplate supplied as standard on all Type WL Switches. Other engravings available upon request. Color - Black with silver letters.

Outline and Mounting Dimensions



Panel Drilling



Number of Stages	Dimension A	Approximate Weight (lbs)
1 + 2	7.06	6.5
3	8.28	7.0
4	9.13	7.5
5	9.97	8.0
6	10.81	9.0
7 + 8	12.50	10.0
9 + 10	14.19	11.0

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