

## SERIES 08,09,42,44,50 Spring Return

### FEATURES

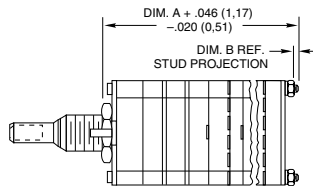
- Hold-To-Test, Hold-To-Calibrate, And Other Momentary Applications
- Choice of Configurations, Ratings, Styles and Circuitry
- 10,000 Cycles of Operation

### DESCRIPTION

A spring return rotary switch has 1 or more momentary positions. Maintaining contact at momentary positions requires rotational force. Releasing the force allows the mechanism to return the contact to a normal, or detent, position.

### DIMENSIONS

#### Series 08 & 09

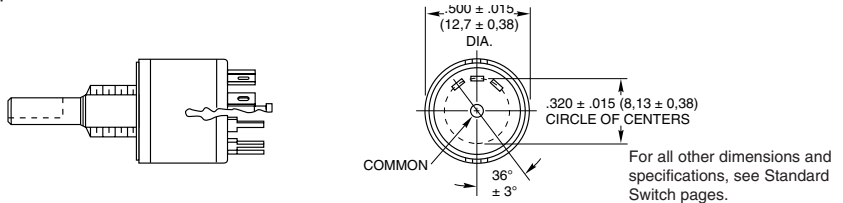


No. of Decks	Dim A	Dim B
1	.960 (24,38)	.062 (1,57)
2	1.228 (31,19)	.062 (1,57)
3	1.496 (38,0)	.062 (1,57)
4	1.764 (44,81)	.062 (1,57)
5	2.032 (51,61)	.062 (1,57)
6	2.550 (64,77)	.312 (7,92)

For all other dimensions and specifications, see Standard Switch pages.

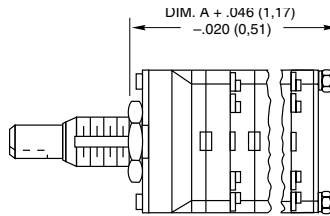
#### Series 50

Equivalent to Series 50 Standard Switches



For all other dimensions and specifications, see Standard Switch pages.

#### Series 42 & 44



No. of Decks	Dim. A
1	1.025 (26,04)
2	1.371 (34,82)
3	1.717 (43,61)

For all other dimensions and specifications, see Standard Switch pages.

### CONFIGURATIONS

This configuration indicates a counterclockwise force is required to hold the switch at position #1. "M" indicates a momentary position counterclockwise of "D" and "D", detented ones.

Positions	1	2	3
	M	D	D

Releasing this force breaks contact with position #1 and returns the switch to #2. Normal rotary switch detent action occurs when the switch is rotated between position #2 and #3.

All of the configurations (except *MDM*) list a basic 2 position arrangement which is shown in italics. Example: *MDDDDD* or *DDDDDM*. Several positions can be added during the switch construction at the factory; but, any configuration must always contain the 2 basic positions.

### SELECTING A SWITCH

**1. Select a Configuration:** The total number of positions always includes the 2 basic positions. A (4) position switch of *DDDDM* configuration would have 3 detent positions counterclockwise of the momentary position.

**2. Select Series, Angle of Throw, and Style:** See the Choices Chart. The basic switch description, series, and throw are as follows:  
 1/2", 1/4 Amp, multi-deck 08 = 36° 09 = 30°  
 1", 1 Amp, multi-deck 42 = 36° 44 = 30°  
 1/2", 200 mA, single deck 50 = 36°

Electrical ratings are the same as those of the conventional switches with the exception of life. Life is limited to 10,000 cycles of operation (25,000 cycles for Series 50) due to the spring arrangement. Dimensions are the same as for conventional types except for the shaft flat orientation of the 3, 4, 5, and 6 pole, Series 09 and 44 in the *DDDDDM* configuration (see chart).

**3. Select Poles & Positions Per Pole:** If you do not find the poles and positions per pole you need in one series, try another or contact the factory. If the behind panel length is a problem, select a multi-pole type instead of a single deck.

### OPTIONS

Watertight panel seal; Multi-pole switches that exceed the limits noted in the Selector Chart; Series 50 *MD* or *DM* configurations in Military styles; Series 08, 09, & 44 in *MMMDMM*, and in *MMDDMM*, and in *MMMMMD*.

**Not available through Distributors**

### ORDERING INFORMATION

Create the part number using this example.

**093103-2-045**

- Stem number from chart (4 or 5 digits)
- Number of Decks
- Number of Poles/Deck
- Type of Contacts: S=Shorting, N=Non-Shorting
- Number of Positions/Pole

Exception: Numbers beginning with 5 are already complete part numbers.

**CHOICES AND LIMITATIONS**

Con-figuration	Con-ventional Switch	Description Of Style	Spring Return Stem Number (See Ordering Info.)	No. Of Decks	Poles Per Deck	Positions Per Pole & Contact Type	Location Of Unique Position, Detent or Momentary	Term. Opp. Flat**
DDDDDM	08A36	Standard	08317	1 to 6 1 to 3	1 2	02 to 05 (N or S) 02 to 05 (N or S)	M 5 M 5, 10	5 5
	09A30	Standard	09310	1 to 6 1 to 3 1 or 2 1 1	1 2 3 4 5 or 6	02 to 06 (N or S) 02 to 06 (N or S) 02 to 04 (N or S) 02 or 03 (N or S) 02 (N or S)	M 6 M 6, 12 M 4, 8, 12 M 3, 6, 9, 12 M 2, 4, 6, 8, 10, 12	6 6 4 3 2
	42A36	Standard	42349	1 to 3 1	1 2	02 to 05 (N or S) 02 to 05 (N or S)	M 5 M 5, 10	5 5
	42M36	Military	42352	1 to 3 1	1 2	02 to 05 (N or S) 02 to 05 (N or S)	M 5 M 5, 10	5 5
	44A30	Standard	44346	1 to 3 1	1 2	02 to 06 (N or S) 02 to 06 (N or S)	M 6 M 6, 12	6 6
	44M30	Military	44350	1 to 3 1	1 2	02 to 06 (N or S) 02 to 06 (N or S)	M 6 M 6, 12	6 6
	MDDDDD	08A36	Standard	08319	1 to 6 1 to 3	1 2	02 to 05 (N or S) 02 to 05 (N or S)	M 1 M 1, 6
09A30		Standard	09312	1 to 6 1 to 3 1 or 2 1 1	1 2 3 4 5 or 6	02 to 06 (N or S) 02 to 06 (N or S) 02 to 04 (N or S) 02 or 03 (N or S) 02 (N or S)	M 1 M 1, 7 M 1, 5, 9 M 1, 4, 7, 10 M 1, 3, 5, 7, 9, 11	1 1 1 1 1
09M30		Military	09356	1 to 3 1 1	1 2 3	02 to 06 (N or S) 02 to 06 (N or S) 02 to 04 (N or S)	M 1 M 1, 7 M 1, 5, 9	1 1 1
42A36		Standard	42350	1 to 3 1	1 2	02 to 05 (N or S) 02 to 05 (N or S)	M 1 M 1, 6	1 1
42M36		Military	42353	1 to 3 1	1 2	02 to 05 (N or S) 02 to 05 (N or S)	M 1 M 1, 6	1 1
44A30		Standard	44312	1 to 3 1	1 2	02 to 06 (N or S) 02 to 06 (N or S)	M 1 M 1, 7	1 1
44M30		Military	44351	1 to 3 1	1 2	02 to 06 (N or S) 02 to 06 (N or S)	M 1 M 1, 7	1 1
MDM	50A36	Std., Solder Lug	503265-1-03N*	1	1	03N	D 2	2
	50P36	Std., PC Mount	503267-1-03N*	1	1	03N	D 2	2
	8A36	Standard	08316	1 to 6 1 to 3	1 2	03 (N or S) 03 (N or S)	D 2 D 2, 7	2 2
	9A30	Standard	09311	1 to 6 1 to 3 1 or 2 1	1 2 3 4	03 (N or S) 03 (N or S) 03 (N or S) 03 (N or S)	D 2 D 2, 8 D 2, 6, 10 D 2, 5, 8, 11	2 2 2 2
	42A36	Standard	42348	1 to 3 1	1 2	03 (N or S) 03 (N or S)	D 2 D 2, 7	2 2
	42M36	Military	42351	1 to 3 1	1 2	03 (N or S) 03 (N or S)	D 2 D 2, 7	2 2
	44A30	Standard	44345	1 to 3 1	1 2	03 (N or S) 03 (N or S)	D 2 D 2, 8	2 2
	44M30	Military	44349	1 to 3 1	1 2	03 (N or S) 03 (N or S)	D 2 D 2, 8	2 2

\*This is a complete (not stem) part number.  
 \*\*Terminal opposite shaft flat when switch is in its unique (detent or momentary) position.

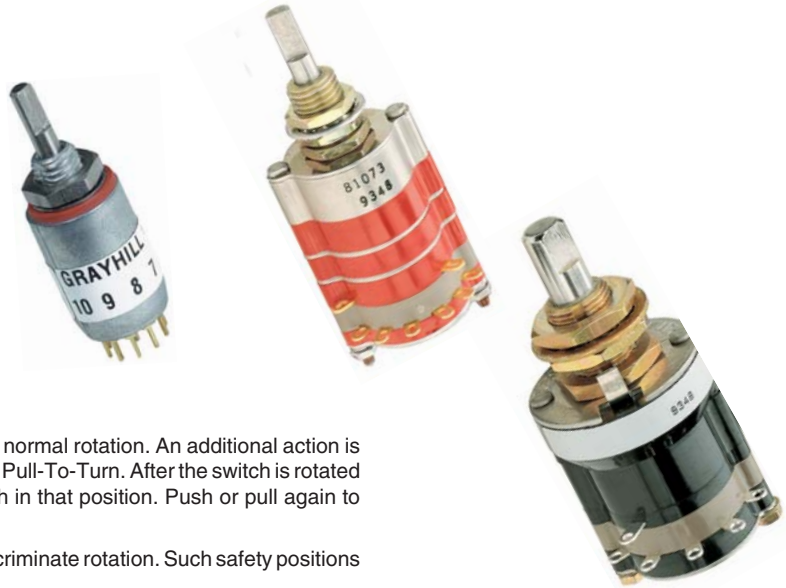
**Available from your local Grayhill Distributor**

For prices and discounts, contact a local Sales Office, an authorized local Distributor, or Grayhill.

**SERIES 09, 42, 44, 50, 51**  
Isolated Position

**FEATURES**

- Protected Switch Positions For Safety, Calibration, or Stand-by
- Choice of Push- or Pull-To-Turn
- 1/2" Diameter, 200 mA and 1" Diameter, 1 Amp Switch
- 10,000 Cycles of Operation



**DESCRIPTION**

An isolated position is one which cannot be reached by the normal rotation. An additional action is required by the operator. It could be either Push-To-Turn, or Pull-To-Turn. After the switch is rotated to the isolated position, releasing the shaft locks the switch in that position. Push or pull again to rotate the switch again.

Use isolated positions to protect a switch position from indiscriminate rotation. Such safety positions might include "calibrate", "off" and/or "stand-by".

**DIMENSIONS**

Series 09		Series 50 & 51		Series 42 & 44																											
	<table border="1"> <thead> <tr> <th></th> <th>Dimension A</th> </tr> </thead> <tbody> <tr> <td>1 Deck</td> <td>1.228 (31,19)</td> </tr> <tr> <td>2 Decks</td> <td>1.496 (38,0)</td> </tr> <tr> <td>3 Decks</td> <td>1.764 (44,81)</td> </tr> <tr> <td>4 Decks</td> <td>2.032 (51,61)</td> </tr> </tbody> </table>		Dimension A	1 Deck	1.228 (31,19)	2 Decks	1.496 (38,0)	3 Decks	1.764 (44,81)	4 Decks	2.032 (51,61)		<table border="1"> <thead> <tr> <th></th> <th>Dimension A</th> </tr> </thead> <tbody> <tr> <td>Solder Lug</td> <td>.893 ± .025 (22,68 ± 0,64)</td> </tr> <tr> <td>PC Style</td> <td>.897 ± .025 (22,78 ± 0,64)</td> </tr> </tbody> </table>		Dimension A	Solder Lug	.893 ± .025 (22,68 ± 0,64)	PC Style	.897 ± .025 (22,78 ± 0,64)		<table border="1"> <thead> <tr> <th></th> <th>Dimension A</th> </tr> </thead> <tbody> <tr> <td>1 Deck</td> <td>1.371 (34,82)</td> </tr> <tr> <td>2 Decks</td> <td>1.717 (43,61)</td> </tr> <tr> <td>3 Decks</td> <td>2.063 (52,40)</td> </tr> <tr> <td>4 Decks</td> <td>2.409 (61,19)</td> </tr> </tbody> </table>		Dimension A	1 Deck	1.371 (34,82)	2 Decks	1.717 (43,61)	3 Decks	2.063 (52,40)	4 Decks	2.409 (61,19)
	Dimension A																														
1 Deck	1.228 (31,19)																														
2 Decks	1.496 (38,0)																														
3 Decks	1.764 (44,81)																														
4 Decks	2.032 (51,61)																														
	Dimension A																														
Solder Lug	.893 ± .025 (22,68 ± 0,64)																														
PC Style	.897 ± .025 (22,78 ± 0,64)																														
	Dimension A																														
1 Deck	1.371 (34,82)																														
2 Decks	1.717 (43,61)																														
3 Decks	2.063 (52,40)																														
4 Decks	2.409 (61,19)																														
<p>Grayhill part number and date code marked on label. Customer number marked on request.</p>																															

**EXTERNAL DIFFERENCES**

The isolated position mechanism increases the depth of the Series 50 and 51 by 0.217" (5,51 mm). All other dimensions remain unchanged. In Series 9, 42 and 44, it has the appearance of an additional deck section without terminals, located directly behind the detent system.

**SPECIFICATIONS**

**Electrical Ratings**

The switching elements, and therefore ratings, are the same in an isolated position switch as in a conventional rotary switch. Mechanical life is also the same.

**Additional Characteristics**

**Shaft Movement or Vertical Travel:**

Series 09	.062 ± .020 (1,57 ± 0,51)
Series 42 & 44	.070 ± .020 (1,78 ± 0,51)
Series 50 & 51	.080 ± .020 (2,03 ± 0,51)

**Push or Pull Force Required:**

Series 09	1.75 ± .5 lbs
Series 42 & 44	2 ± .5 lbs
Series 50 & 51	2 ± .5 lbs

**Stops:** Single pole per deck switches with the maximum number of positions are supplied with stops only on request: 12 positions in 30° throw, 10 in 36°, and 8 in 45°.

**Stop Strength:** Approximately 7.5 pound-inches for the isolated position stop.

**Materials and Finishes**

Materials and finishes for the isolation mechanism are listed here.

**Series 50 and 51**

**Housing:** Zinc casting, tin/zinc-plated

**Shaft:** 303 stainless steel

**Stop Pin and Stop Post:** 303 stainless steel

**Spring:** Tinned music wire

**Series 09**

**Housing:** Phenolic for style A; Diallyl, for M

**Shaft:** 303 stainless steel, electro-polished

**Stop Pin and Stop Post:** 303 stainless steel

**Spring:** Tinned music wire

**Series 42 and 44**

**Housing:** Diallyl per MIL-M-14

**Shaft:** 303 stainless steel

**Lock Plate:** 302 stainless steel

**Lock Arm:** 316 stainless steel

**Lock Post:** Brass, tin/zinc-plated

**Compression Spring:** Tinned music wire

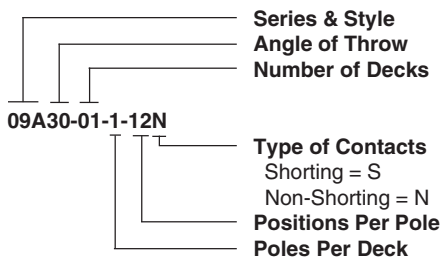
**CHOICES AND LIMITATIONS**

Standard Style	Military Style**	Style Description	Angle Of Throw	No. Of Decks	Poles Per Deck	Positions Per Pole	Shorting Or Non-Shorting
09A	09M	Solder Lug	30°	01 to 04 01 to 04 01 to 04 01 to 04 01 to 04 01 to 03	1 2 3 4 5 6	02 to 12 02 to 06 02 to 04 02 or 03 02 02	N or S N or S N or S N or S N or S N or S
42A 42S — —	42M — 42H 42HS	Solder Lug Sealed 125° Temperature Rating 125° Temp Rating, Sealed	36°	01 to 04 01 to 04	1 2	02 to 10 02 to 05	N or S N or S
44A 44S — —	44M — 44H 44HS	Solder Lug Sealed 125° Temperature Rating 125° Temp Rating, Sealed	30°   45°	01 to 04 01 to 04 01 to 04 01 to 04 01 to 04 01 to 04	1 2 3 4 5 6	02 to 12 02 to 06 02 to 04 02 or 03 02 02	N or S N or S N or S N or S N or S N or S
-- -- -- --	50C 50CP 50M* 50MP*	Solder Lug PC Mount Solder Lug, Sealed Sealed, PC	36°	01	1 2	02 to 10 02 to 05	N or S N or S
-- -- -- --	51C 51CP 51M* 51MP*	Solder Lug PC Mount Solder Lug, Sealed PC Mount, Sealed	30°	01	1 2 3 4	02 to 12 02 to 06 02 or 03 02 or 03	N or S N or S N or S N or S

\*(Pull-to-Turn only) \*\*For specifics on military qualified products, see Standard Switch Pages.

**CONVENTIONAL NUMBERS**

Start by creating a conventional switch number in the manner which follows:



Note: No stop arrangement suffix is needed. See Describing Stops.

**DESCRIBING POSITIONS**

The Grayhill system for isolating positions lets you choose the positions to be isolated. Grayhill inserts isolation posts next to the positions to be isolated. Consider a continuous rotation switch of the Series 09A with a 30° angle of throw. The terminals are listed here from 1 through 12 with a space between each to indicate where isolation posts might be inserted.

12 1 2 3 4 5 6 7 8 9 10 11 12

Let's isolate position 1 and position 2 from all other positions and from each other. We indicate isolation posts as shown here:

12P1P2P3 4 5 6 7 8 9 10 11 12

To isolate just position 1, describe like this:

12P1P2 3 4 5 6 7 8 9 10 11 12

To isolate positions 1 and 2 from all other positions, but not from each other, do this:

12P1 2P3 4 5 6 7 8 9 10 11 12

**DESCRIBING STOPS**

When a 1-pole switch has less than the maximum number of positions, consider also the stop system. Following is the arrangement for a 6 position switch with the position 1 isolated.

STOP 1P2 3 4 5 6 STOP

The word "STOP" indicates the conventional switch stops, which limit rotation to positions 1 through 6. To isolate position 1 we insert only one isolation post—between terminals 1 and 2. The stop system already prevents rotation beyond terminal 1.

In multi-pole switches, the stop system and isolation system described for the first pole, automatically affects the other poles. In the example above, isolating position #1 on the first pole isolates the first position (terminal #7) of the second pole. See Standard Switch Pages for a 2 pole circuit diagram for a 30° throw switch.

**ORDERING INFORMATION**

Indicate this as a SPECIAL switch to ensure that no error is made when the order is entered. Sample part number:

SPECIAL  
09A30-04-1-12N  
PULL 12P1P2P3 4 5 6 7 8 9 10 11 12

This sample part number orders a Series 9 standard style, four deck, one pole per deck, twelve positions per pole rotary switch with non-shorting contacts and isolation posts between positions 12 and 1, between 1 and 2, and between 2 and 3.

This lengthy order number is required to prevent any possible confusion in ordering the switch. When we receive your order, we will assign a special "short form" part number to facilitate future identification of this special switch. This number is sequentially assigned as the need arises, and is non-descriptive. A typical "short form" special part number might be 09YY12345. Contact Grayhill for price.

**Not available through Distributors.**