

1/2" DIAMETER, 200 MA ROTARY SWITCHES

SERIES 56

986-264 to 986-495

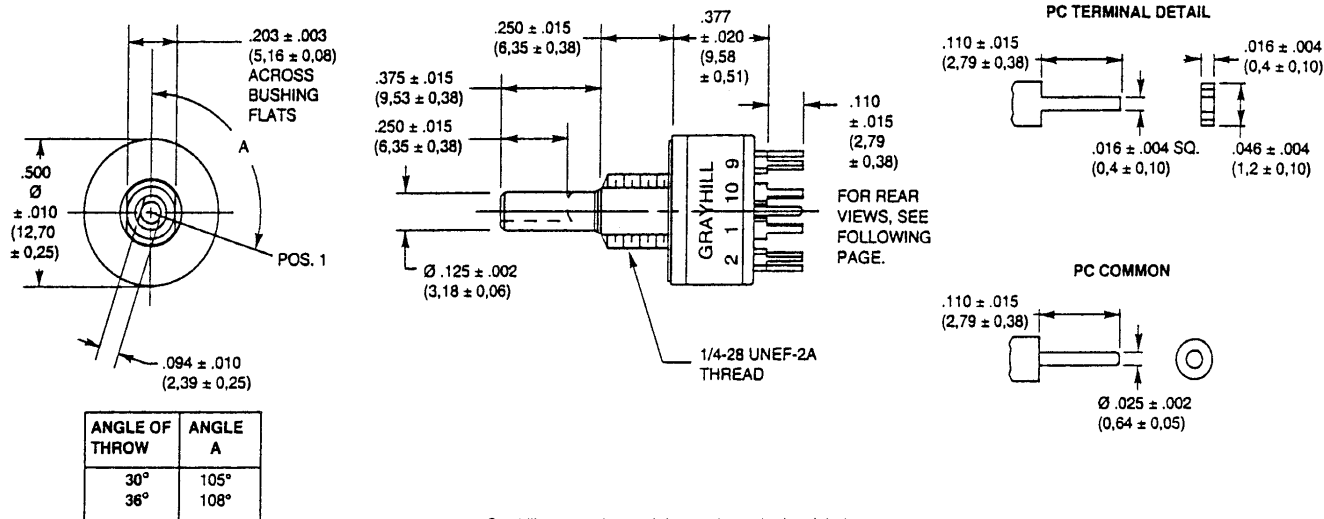
FEATURES

- Requires Minimum Distance Behind the panel
- Adjustable Stop Types Provide Prototypes Immediately
- Industrial Quality, Economically Priced



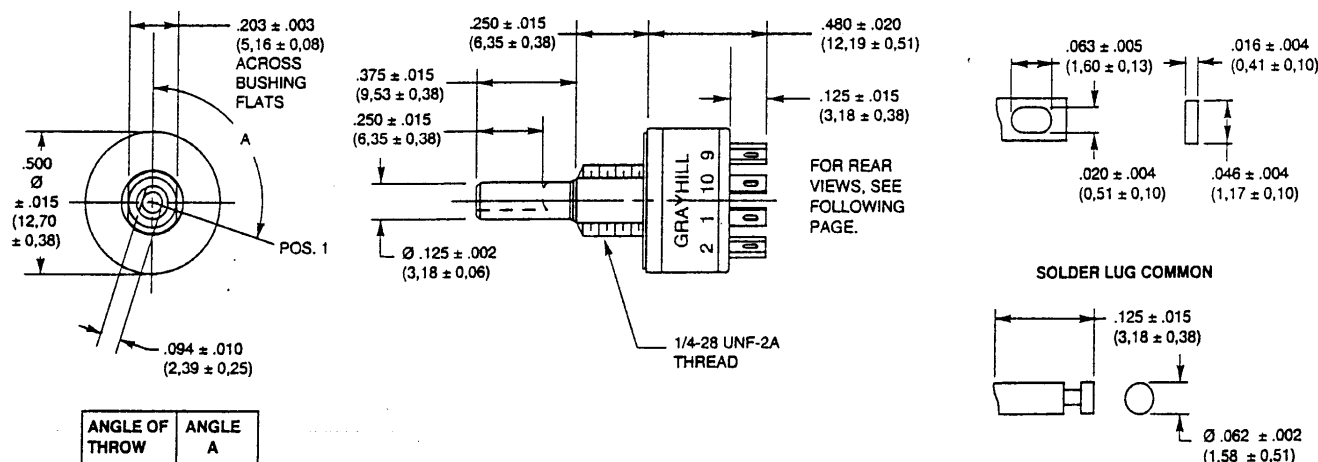
DIMENSIONS In inches (and millimeters)

PC Mount Style



Grayhill part number and date code marked on label.
Customer part number marked on request.

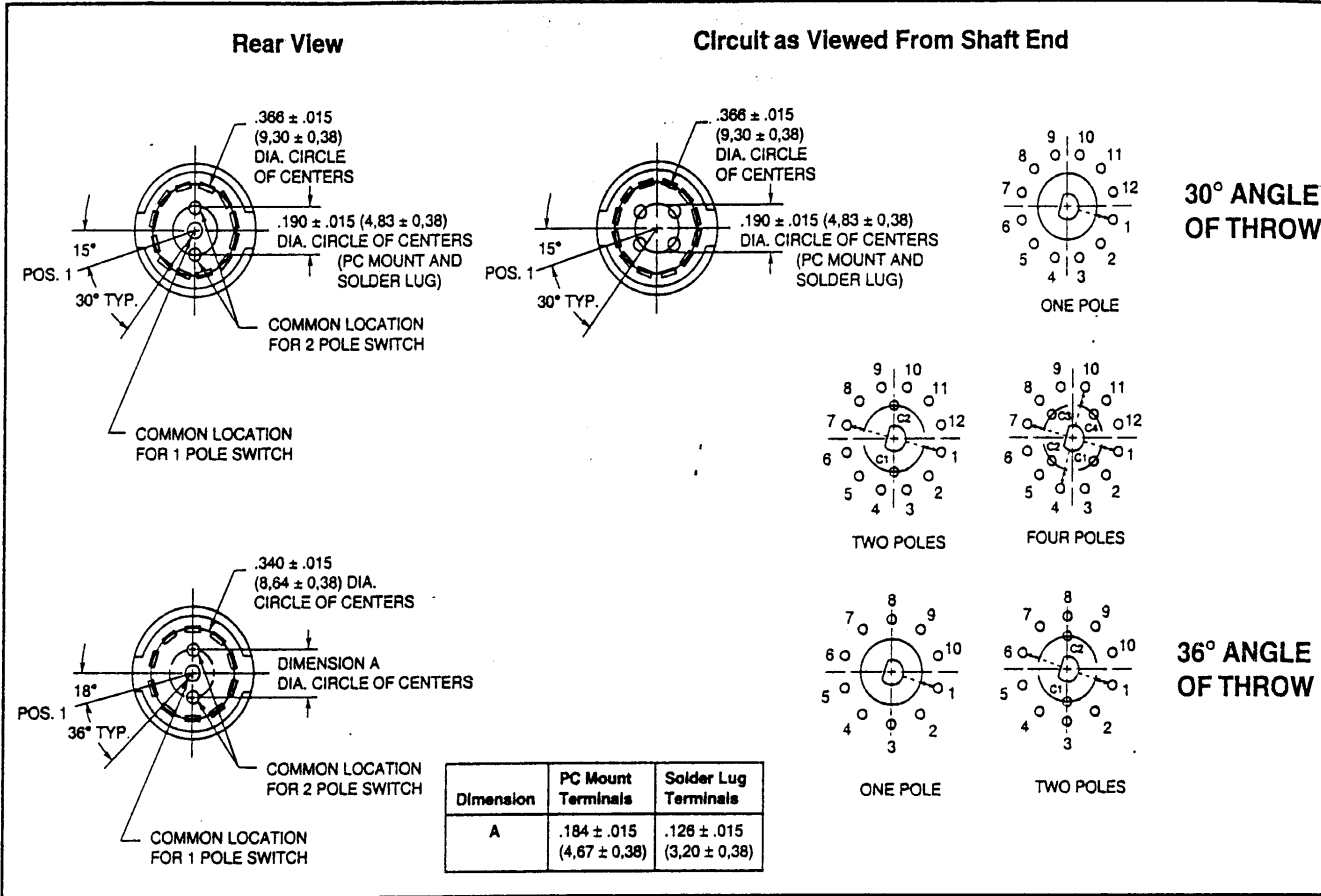
Solder Lug Style



Grayhill part number and date code marked on label.
Customer part number marked on request.

1/2" DIAMETER, 200 MA ROTARY SWITCHES

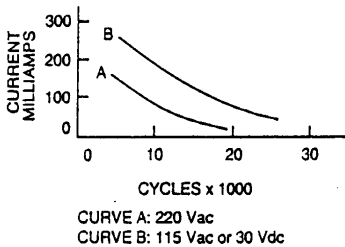
CIRCUIT DIAGRAMS AND REAR VIEWS FOR PC MOUNTABLE AND SOLDER LUG TERMINALS



SPECIFICATIONS

Electrical Ratings

Chart shown for non-shorting (break before make) contacts, resistive load.



One cycle is 360° rotation clockwise and 360° return. The data for the curve was measured at sea level, 25° C and 68% relative humidity with the life limiting criteria which follows.

Contact Resistance: 100 milliohms maximum, (15 milliohms initially).

Insulation Resistance: 10,000 megohms minimum between mutually insulated parts (50,000 megohms initially).

Voltage Breakdown: 600 Vac minimum between mutually insulated parts at standard atmospheric pressure.

Life Expectancy: As determined from the load-life curve for the current to be switched. Contact GRAYHILL for more information if any of the following is true: the life limiting criteria are more critical than those listed; longer operation is

required; a larger make and break current is required; the operating environment includes elevated temperatures or reduced pressures.

Contact Carry Rating: Switch will carry 6 amperes continuously with a maximum contact temperature rise of 20°C.

Additional Characteristics

Contact Type and Forces: Shorting or non-shorting wiping contacts with over 25 grams of contact force.

Shaft Flat Orientation: Flat opposite contacting position of pole number one (see circuit diagrams).

Terminals: Switches have the full circle of terminals, regardless of number of active positions.

Stop Strength: 7.5 pound-inches minimum

Rotational Torque: 3.5 to 9 ounce-inches (21-53 mN-m), depending on the number of poles.

Bushing Mounting: Required for switches with stops, and recommended for switches without stops.

Meets MIL-S-3786 for:

High and medium shock; Vibration (10 to 2,000 Hz); Thermal shock(-65° to 85° C); Salt spray; Explosion; Stop strength (7.5 in-lbs. minimum (.85 N-m)); Terminal strength; Sealed styles withstand water pressure of 15 PSI minimum (103 KPa) without leakage.

Materials and Finishes

Housing: Zinc die cast, Zinc plated with Chromate treatment.

Mounting Nut: Brass, Zinc plated with Chromate treatment.

Lockwasher: Spring Steel, Zinc plated with Chromate treatment.

Panel Seal: Silicone rubber

Shaft and Stop Arm: Zinc die cast, Zinc plated with Chromate treatment.

Retaining Ring: 302 Stainless Steel, passivated

Shaft Seal: Silicone rubber

Stop Pins: 303 Stainless Steel, passivated

Detent Rotor: Molded Thermoplastic

Detent Spring: Tinned music wire

Detent Balls: Steel, Nickel plated

Contact Spring: Stainless Steel, passivated

Rotor Contact: Brass, Silver over Nickel plated

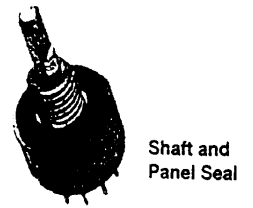
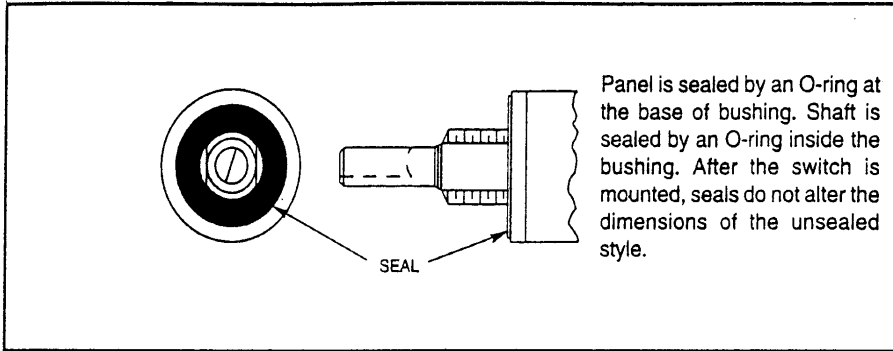
Common Ring: Brass, Gold over Silver over Nickel plated

Terminals: Brass, Gold over Silver over Nickel plated

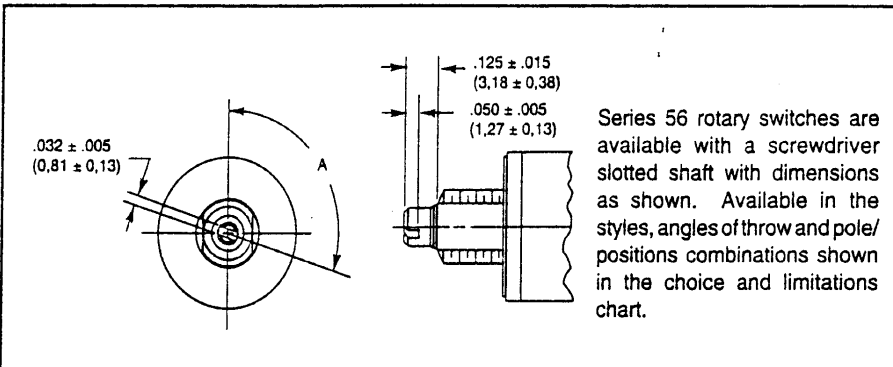
Switch Base: Molded thermoset plastic

Mounting Hardware: One mounting nut .089" thick by .375" across flats and one internal tooth lockwasher are supplied with the switch.

SHAFT AND PANEL SEAL—Style S

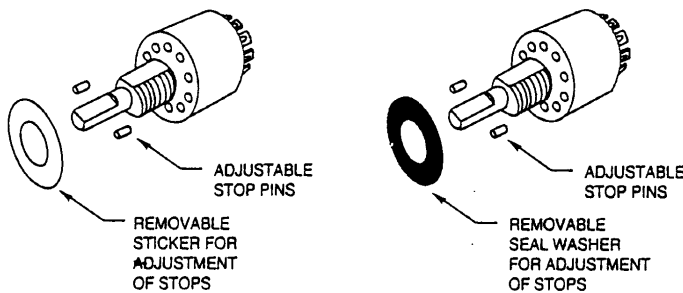


SCREWDRIVER SLOTTED SHAFT—OPTION

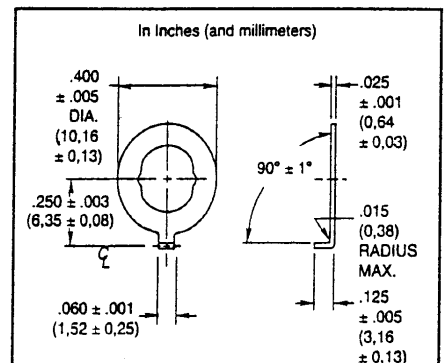


ADJUSTABLE STOP SWITCHES

Two stop pins and an adhesive backed sticker or seal washer are provided. Sticker is temporarily removed to locate stop pins as desired to limit the shaft rotation. All dimensions are identical to the fixed stop switch counterpart.



ACCESSORY—Non-Turn Washer



Part No. 50J1066

Cut round hole for the bushing and for the non-turn tab. Washer fits the double D bushing flats. Washer is sold only when accompanied by an order for a like number of switches. Washer is 302 stainless steel.

SUGGESTED ADJUSTABLE STOP SUBSTITUTION GUIDE

Fixed Stop Style	Adjustable Stop Style Equivalent	Fixed Stop Style	Adjustable Stop Style Equivalent
56A	56D	56B	56BD
56S	56SD	56BS	56BSD
56P	56DP	56BP	56BDP
56SP	56SDP	56BSP	56BDSP

1/2" DIAMETER 200 MA ROTARY SWITCHES

CHOICES AND LIMITATIONS -Series 56:

Style Designation	FEATURES				Screwdriver Slotted Shaft Equivalent	Angle Of Throw	Number Of Poles	Number Of Positions Per Pole	Shorting Or Non-Shorting Contacts
	Solder Lug Terminals	PC Mount Terminals	Shaft/Panel Seal	Adjustable Stops ¹					
A	X				B	30°	1 2 4	02 thru 12 02 thru 06 02 or 03	N or S N or S N or S
S	X		X	BS					
P		X		BP					
SP		X	X	BSP					
D	X			X	BD	36°	1 2	02 thru 10 02 thru 05	N or S N or S
SD	X		X	BSD					
DP		X		BDP					
SDP		X	X	BSDP					

¹ Adjustable stop versions allow selection of 2 positions to the maximum number of positions per pole.

ORDERING INFORMATION

Series 56
Style Letters from Choices Chart
Angle of Throw: 30 or 36

56A36-01-1-10N-F

Stop Arrangement: The suffix C or F must be added to a one pole per deck switch with the maximum number of positions to indicate continuous rotation (C) or fixed stops (F) between position 1 and the last position. Leave blank if not applicable.

Type of Contacts: N = Non-shorting, S = Shorting

Positions Per Pole: 02 as a minimum to the maximum allowable for the angle of throw and number of poles per the Choices Chart. Use the letters AJ in this location if adjustable stop switch is to be ordered.

Poles per Deck: Limited by angle of throw. See chart

Number of Decks: 01 only

STANDARD OPTIONS

Not available thru Distributors.

Intermixing of shorting and non-shorting contacts. Contact Grayhill.

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

1" DIAMETER, 1 AMP ROTARY SWITCHES

SERIES 42, 43, 44 AND 54

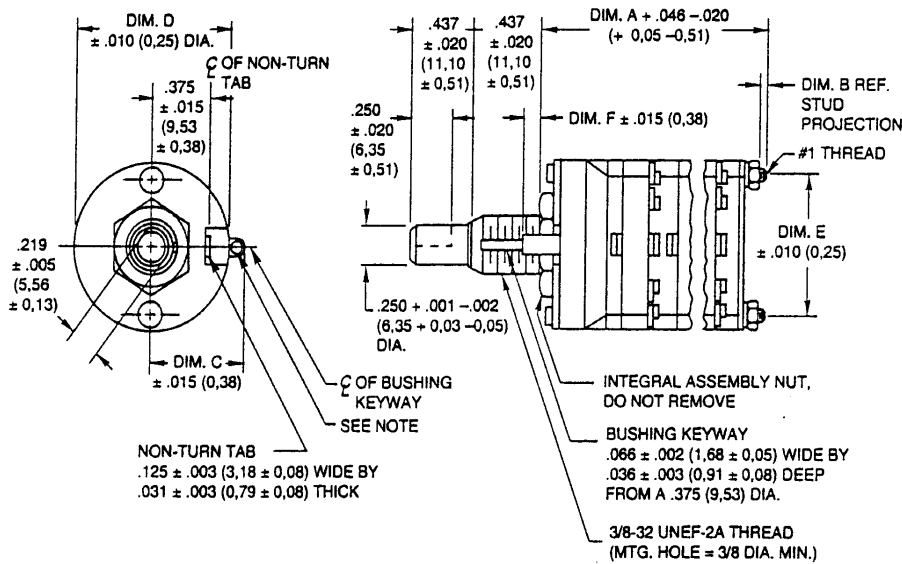
FEATURES

- Rugged Construction Insures Operation For the Life of Your Equipment
- Many Circuitry Options
- MIL Qualified Versions MIL-S-3786/04
- Features Choice Include: Shaft/ Panel Seal, Adjustable Stops, PC Termination, UL Recognized



DIMENSIONS In inches (and millimeters)

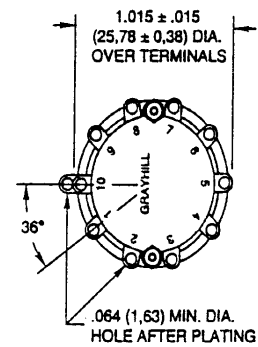
Standard, UL Recognized and Military Qualified Solder Lug Styles



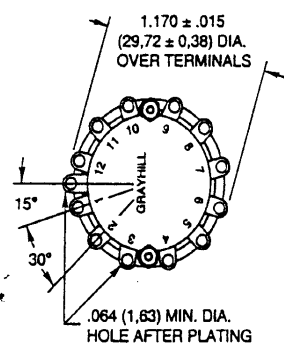
Note: Common location for a single pole per deck switch. For common location on multi-pole switches, see circuit diagrams.

Rear Views

Series 42



Series 44



For rear view of 45°, 60° and 90°, see circuit diagram.

No. of Decks	Dimension A	Dimension B		Approx. Weight Grams		No. of Decks	Dimension A	Dimension B		Approx. Weight Grams	
		Style A	Style M or H	42	44			Style A	Style M or H	42	44
1	1.025 (26,04)	.062 (1,57)	.030 (0,76)	40.0	48	7	3.351 (85,16)	.312 (7,92)	.280 (7,11)	73.0	90
2	1.371 (34,82)	.062 (1,57)	.030 (0,76)	45.5	55	8	3.697 (93,90)	.312 (7,92)	.280 (7,11)	78.5	97
3	1.717 (43,61)	.062 (1,57)	.030 (0,76)	51.0	62	9	4.043 (102,69)	.312 (7,92)	.280 (7,11)	84.0	104
4	2.063 (52,40)	.062 (1,57)	.030 (0,76)	56.5	69	10	4.389 (111,48)	.312 (7,92)	.280 (7,11)	89.5	111
5	2.409 (61,19)	.062 (1,57)	.030 (0,76)	62.0	76	11	4.735 (120,27)	.312 (7,92)	.280 (7,11)	95.0	118
6	3.005 (76,33)	.312 (7,92)	.280 (7,11)	67.5	83	12	5.081 (129,06)	.312 (7,92)	.280 (7,11)	100.5	125

Grayhill part number and date code marked on detent cover label. Customer part number marked on request. Military part number marked when required. UL recognized markings as required.

Dimension	C	D	E	F
Series 42	.562 (14,27)	1.000 (25,4)	.830 (21,08)	.093 (2,36)
Series 44	.642 (16,31)	1.162 (29,51)	1.000 (25,4)	.121 (3,07)

See pages E-67 through E-70 for specifications, accessories and ordering information.

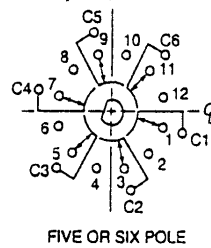
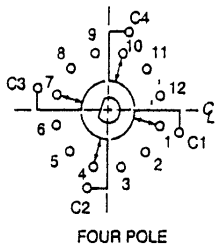
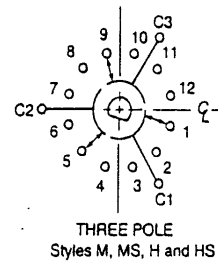
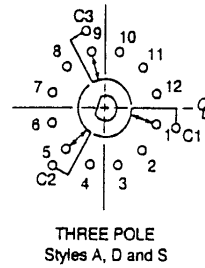
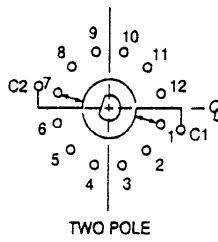
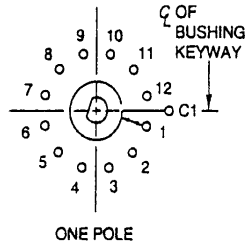
1" DIAMETER, 1 AMP ROTARY SWITCHES

CIRCUIT DIAGRAMS—Solder Lug Terminals

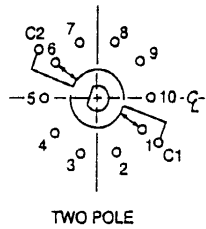
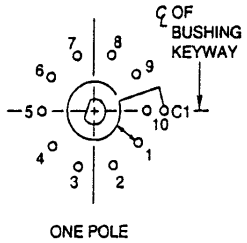
Switch is Viewed From Shaft End and Shown in Position No. 1

Note: All common terminals are located above base terminals as shown.

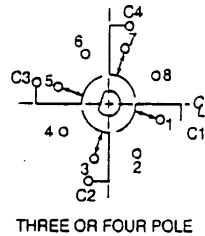
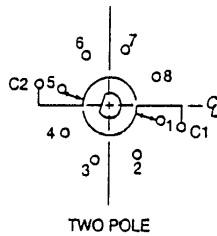
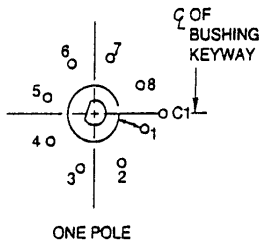
SERIES 44 & 54
30° ANGLE
OF THROW



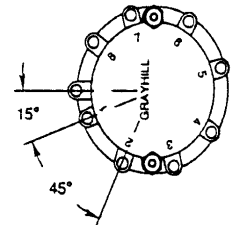
SERIES 42 & 43
36° ANGLE
OF THROW



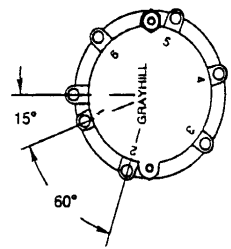
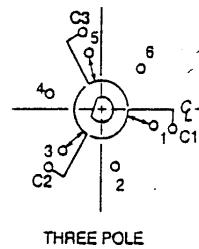
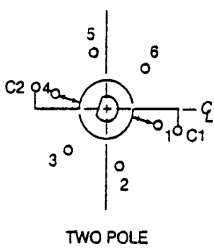
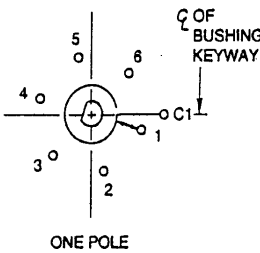
SERIES 44
45° ANGLE
OF THROW



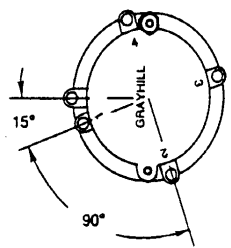
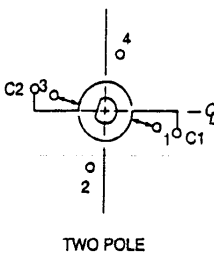
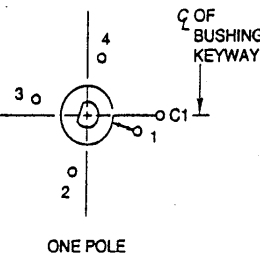
Rear Views



SERIES 44
60° ANGLE
OF THROW



SERIES 44
90° ANGLE
OF THROW



ADJUSTABLE STOP SWITCHES—Series 42 and 44

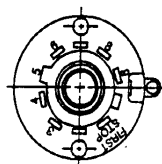
The standard and UL recognized switches are also available with adjustable stops. Two removable stop washers allow you to limit the number of switch positions as needed. A knurled nut is supplied to secure the washers if desired. These switches have no bushing keyway. All other dimensions, ratings and characteristics are the same as the standard fixed stop styles. Although not military qualified, the adjustable styles are useful in military equipment prototypes. However, when submitting the equipment for government approval, the fixed stop qualified style should be substituted.

See additional adjustable stop switch information at the beginning of the Rotary Switch section. For ordering information, see page E-64.

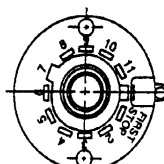
Equivalent Styles

For style 42A36, use 42D36
 For style 44A30, use 44D30
 For style 42M36, use 42D36 initially
 For style 44M30, use 44D30 initially
 For style 42U36, use 42UD36
 For style 44U30, use 44UD30

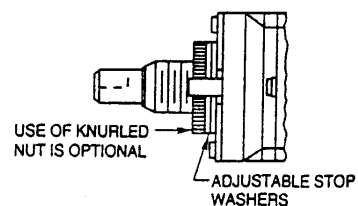
Front Views



Series 42



Series 44



1" DIAMETER, 1 AMP ROTARY SWITCHES

MILITARY QUALIFIED

Single Shaft Switches

The military styles of the single shaft Series 42 and 44 rotary switches are qualified to MIL-S-3786/4, specifically SR04-1. Qualification includes two temperature ranges. Unsealed styles M, MB, MG and MBG are qualified for -65 to 85°C. Unsealed styles H, HB, HG and HBG, plus sealed styles HS, HBS, HGS and HBGS are qualified for -65°C to 125°C. Qualification includes low level switching and shaft grounding as specified in MIL-S-3786. Qualification includes 30°, 36°, 45°, 60° and 90° angles of throw with solder lug terminals. The military styles are dimensionally the same as the standard styles with two exceptions. The location of the common for the 3-pole switch differs (see circuit diagrams), and the non-turn tab for styles HS, HBS, HGS and HBGS differs per the Shaft and Panel Seal description following.

Two Switches, Concentric Shafts

The M style of the concentric shaft Series 43 and 54 switches is qualified to MIL-S-3786/4,

specifically SR04-2. Unsealed switches are qualified for -65°C to 85°C in 30°, 36°, 45°, 60° and 90° throws. The standard and military styles of the concentric switches have the same dimensions with the exception of the location of the 3 pole common (see circuit diagrams). The 30° and 36° throws are described in the ordering information. If the 45°, 60° and 90° throws are required, they can be provided in Section A of the Series 54 Rotary Switches; see Standard Options, page E-10.

Add-A-Pot Switches

The military style of the add-a-pot Series 54 switch is qualified to MIL-S-3786/4, specifically SR04-3. These unsealed switches are qualified for -65°C to 85°C in 30°, 45°, 60° and 90° throws. The dimensions of the military style add-a-pot switches are not the same as the standard add-a-pot switches; see drawings.

All Qualified Switches

Complete electrical ratings and characteristics for all of these qualified switches are listed on the

following pages. Standard variations such as terminals, shaft and/or bushing length etc., which do not affect performance, can be marked as qualified product. Adjustable stops cannot be qualified. Contact GRAYHILL for details about variations.

Military qualified switches may be ordered by the military M number listed in MIL-S-3786/4 or by the GRAYHILL part number. They will be marked to specifications.

MILITARY QUALIFIED SHAFT AND PANEL SEAL-

Styles HS, HBS, HGS and HBGS

The shaft is sealed to the bushing by an internal O-ring per MIL-P-5516B. The bushing is sealed to the panel with a silicone rubber washer and a stainless steel backing washer. The combined uncompressed thickness is 0.055" (1,40). Since this switch has a flat cover, a non-turn washer is supplied (see Panel Seal Kit). If using it, mount it in front of the panel. For Panel Seal Kit, see pages E-70.

SPECIFICATIONS

Electrical Ratings

Standard Style

Rated: To make and break the following loads:

	Angle of Throw		
	30° or 36°	45° or 60°	90°
115 Vac resistive	1 amp	5 amps	5 amps
6-28 Vdc resistive	1 amp	1 amp	2 amps
115 Vac inductive	0.25 amp	2 amps	2 amps
115 Vdc inductive	0.02 amp	—	—
6-28 Vdc inductive	0.10 amp	—	—
115 Vdc resistive	0.10 amp	—	—

To carry 10 amps continuously.

Contact Resistance: 50 milliohms maximum

Insulation Resistance: 1,000 megohms minimum

Voltage Breakdown: 1,000 Vac initially (500 Vac or better after most environmental tests)

Life Expectancy: 100,000 mechanical cycles of operation. *Note:* Actual life is determined by a number of factors, including electrical loading, rate of rotation, and environment, as well as maximum voltage breakdown required at the end of life.

UL Recognition-

Styles UA, UD, UM, UP, US and USP

GRAYHILL styles A and M and their variations (D, P, S and SP) of the Series 42, 43, 44 and 54 rotary switches have been tested by Underwriters Laboratories. The letter U in the style indicates proper marking as required by Underwriters Laboratories. These switches are recognized under file number E35289. The UL rating for the Series 42, 43, 44 and 54 is as follows:

Electrical Parameters: style UA=1.0 ampere at 125 Vac. Style UM=1.0 ampere at 125 Vac and also .5 ampere at 125 Vac, inductive load, 0.75 to 0.8 power factor.

Rating based on the following criteria:

Overload: 50 operations at 150% rated AC load
Endurance: 6000 operations at the rated load with 1000 Vac dielectric strength before and after test

Temperature Rise: Not to exceed 30°C when carrying rated AC load after test.

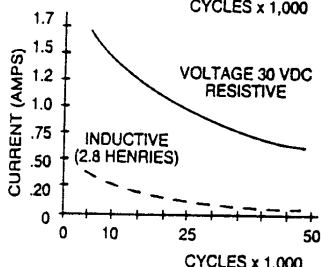
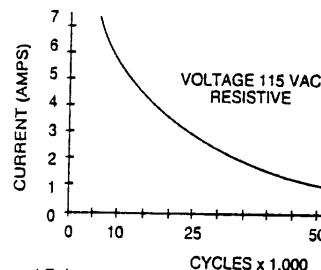
Note: all dimensional drawings for the standard style Series 42, 43, 44 and 54 also apply to these switches, with the exception that switches are marked per specifications.

Electrical Ratings

Military Style

General Rating: This rating is based on standard Grayhill tests of the Military style switch done at ambient conditions. It is provided for comparison to the Standard Style switch.

Charts shown for non-shorting contacts (break before make)



Voltage and Load:

As listed in the chart One cycle is 360° rotation and a return through all switch positions to the starting position. The data for the curves was measured at sea level, 25°C and 68% relative humidity.

The Series 42, 43, 44 and 54, style M, H and HS switches are made to meet requirements of MIL-S-3786, style SR04. Diallyl phthalate molded parts and the design of internal switching elements provide exceptional performance.

Curves shown are typical load-life curves for Series 42, 43, 44 and 54, style M, H and HS switches with 30° or 36° angles of throw. They show the numbers of cycles of rotational life expectancy for the types of loads shown. Thus, with a 5 amp, 115 Vac resistive load, 10,000 cycles of life is expected. If the load is reduced to 3 amps, life is increased to 25,000 cycles. The larger angles of throw (45°, 60° or 90°) switch larger currents for a like number of cycles.

Life limiting or failure criteria for these curves are:

Contact Resistance: 50 milliohms maximum

Insulation Resistance: 1,000 megohms minimum between mutually insulated parts

Voltage Breakdown: 1,000 Vac minimum between mutually insulated parts. These switches will carry 10 amps with maximum contact temperature rise of 20°C. Life can be predicted by GRAYHILL if less critical life characteristics, elevated temperature or reduced pressure is involved.

SPECIFICATIONS

MIL-S-3786 Electrical Values

Military Style

Style M switches, at 85°C, approximately 68% humidity and sea level pressure and style H and HS at 125°C have been tested to make and break the following loads as stated in MIL-S-3786/SR04; 250 milliamperes at 28 Vdc resistive, 100 milliamperes at 28 Vdc inductive (2.8 henries); 75 milliamperes at 115 Vac resistive.

These switches have also been tested at reduced barometric pressure (70,000 feet), 25°C at approximately 68% relative humidity to make and break the following loads as stated in MIL-S-3786/SR04; 200 milliamperes, 28 Vdc resistive; 25 milliamperes, 28 Vdc inductive (2.8 henries); 20 milliamperes, 115 Vac resistive. When tested to these loads and conditions the style M, H and HS switches meet the following life limiting or failure criteria after 25,000 cycles in accordance with MIL-S-3786.

Contact Resistance: 50 milliohms maximum

Insulation Resistance: 1,000 megaohms minimum between terminals and shafts

Dielectric Strength: 1,000 Vac (atmospheric pressure) and 450 Vac (reduced pressure) minimum between mutually insulated parts.

When tested at sea level 25°C and 68% relative humidity with failure criteria of 50 milliohms max. and 750 Vac breakdown voltage, these switches will make and break the following loads: 250 mA at 28 Vdc, inductive (2.8 henries); 1.25 amps at 28 Vdc resistive; 2.0 amps at 115 Vac, 60 Hz resistive, for 10,000 cycles.

These switches also meet MIL-S-3786/SR04 for moisture resistance, medium and high shock, vibration (10 to 2000 cps), thermal shock (-65°C to 125°C), salt spray, explosion and terminal pull.

Materials and Finishes

Standard Style

Bases: Melamine per MIL-M-14,4

Cover, Deck Separators, End Plate and Rotor

Mounting Plate: Phenolic per MIL-M-14

Mounting Bushings and Nuts: Brass, Cadmium plated per QQ-P-416, Class 2, Type II

Shaft Cover Plate, Retaining Rings, Through Bolts, Shaft Extensions, Stop Arm, Stop Washers and Rear Support Plate: Stainless Steel

Detent Balls: Steel, Nickel plated

Detent Springs: Tinned music wire

Rotor Contact, Stator (Base) Contacts: Silver alloy

Terminals (Except Common): Brass, lead-tin plated and fused

Common Plate, Including Solder Lug: Brass, Silver plated .0003" minimum

Mounting Hardware: Two mounting nuts .094" (2,39) thick by .562" (14,27) across flats and one internal tooth lockwasher are supplied with each switch

Materials and Finishes

Military Qualified

Bases: Diallyl per MIL-M-14

Cover, Deck Separators, End Plate and Rotor

Mounting Plate: Diallyl per MIL-M-14

Mounting Bushings and Nuts: Brass, Cadmium plated per QQ-P-416, Class 2, Type II

Shaft Cover Plate, Retaining Rings, Through Bolts, Shaft Extensions, Stop Arm, Stop Washers and Rear Support Plate: Stainless Steel

Detent Balls: Steel, Nickel plated

Detent Springs: Tinned Music Wire

Rotor Contact: Silver Alloy

Terminals, Common Plate Including Solder Lug: Brass, Silver plated .0003" minimum

Mounting Hardware: Two mounting nuts .094" thick by .562" across flats and one internal tooth lockwasher are supplied with each switch.

Additional Characteristics

Standard Style and Military Qualified

Contact: Shorting or non-shorting wiping contacts with over 150 grams of contact force

Rotational Torque: 8-115 ounce-inches depending upon the number of poles per deck, number of decks and angle of throw

Mechanical Life Expectancy: 100,000 cycles of operation

Shaft Flat Orientation: Flat opposite contacting position of pole number one (See circuit diagram).

Stop Strength: For Standard style: 15 pound-inches minimum. For Adjustable Stop styles: 12 pound-inches

Extended Stud: Single shaft switches of six or more decks and concentric shaft switches of a combination of five or more decks (Standard style) or four or more decks (Military style) have longer studs with extra mounting nuts for recommended double end mount.

1" DIAMETER, 1 AMP ROTARY SWITCHES

CHOICES AND LIMITATIONS—Series 42, 43, 44 and 54

A = Standard, Solder Lugs
P = Standard, PC Mount Terminals
D = Standard, Adjustable Stops

S = Shaft and Panel Seal
U = UL Recognized
M = Military Qualified 85°C⁴

H = Military Qualified, 125°C
B = Military, Grounded Shaft
G = Military, Low Level Rating

Single Shaft Switches

Series	Style Choices		Angle of Throw	Number of Decks	Poles Per Deck	Positions Per Pole ^{1,2}	Shorting or Non-Shorting		
	Unsealed	Shaft/Panel Seal							
42			36°	01 thru 12 01 thru 12	1 2	02 thru 10 ³ 02 thru 05	N or S N or S		
44	A	S	30°	01 thru 12	1	02 thru 12 ³	N or S		
	UA	US		01 thru 12	2	02 thru 06	N or S		
	UM ⁵	—		01 thru 08	3	02 thru 04	N or S		
	M	MS ⁴		01 thru 06	4	02 or 03	N or S		
	MB	MBS ⁴		01 thru 04	5	02	N or S		
	MG	MGS ⁴		01 thru 04	6	02	N or S		
	44	MBG	MBGS ⁴	45°	01 thru 12	1	02 thru 08 ³	N or S	
		H	HS		01 thru 06	2	02 thru 04	N or S	
		HB	HBS		01 thru 04	3	02	N	
		HG	HGS		01 thru 03	4	02	N	
		44	D	—	30°	01 thru 12	1	AJ (2 thru 12) ¹	N or S
						01 thru 12	2	AJ (2 thru 6) ¹	N or S
42	UD	—	36°	01 thru 08	3	AJ (2 thru 4) ¹	N or S		
				01 thru 06	4	AJ (2 or 3) ¹	N or S		
42	P	SP	36°	01 thru 12	1	02 thru 10 ³	N or S		
								UP	USP

Concentric Shaft Switches

Series	Style Choices	Angle of Throw	Section A (Front)				Section B (Rear)			
			Decks	Poles	Position	N or S	Decks	Poles	Position	N or S
CONCENTRIC SHAFT, 2 SWITCHES										
54	A ² UA ² M ²	30°	01 thru 03 01 thru 03	1 2	02 thru 12 ³ 02 thru 06	N or S N or S	01 thru 03	1	02 thru 12 ³	N or S
							01 thru 03	2	02 thru 06	N or S
							01 or 02	3	02 thru 04	N or S
							01	4	02 or 03	N or S
							01	5	02	N or S
							01	6	02	N or S
43		36°	01 thru 03	1	02 thru 10 ⁵	N or S	01 thru 03	1	02 thru 10 ³	N or S
							01 thru 03	2	02 thru 05	N or S
ADD-A-POT SWITCHES										
54	D UD	30°	01 thru 03	1	AJ (2-12) ¹	N or S	Second shaft operates a potentiometer supplied by the customer. Rear mounting plates are provided.			
01 thru 03			2	AJ (2-6) ¹	N or S					
43	M	36°	01 thru 03	1	AJ (2-10) ¹	N or S				
01 thru 03			2	02 thru 12 ⁵ 02 thru 06	N or S N or S					

¹For Adjustable Stop (with the letter D), use AJ instead of number of positions when ordering.

²For 45°, 60° or 90° throws in Series 54 switches of these styles, see Standard Options.

³For single pole switches with the maximum positions per pole, continuous rotation is possible. Specify fixed stop or continuous rotation when ordering single shaft switches. Concentric

shaft switches have continuous rotation.

⁴Styles which include both M and S are not qualified but are made of the same materials and construction as qualified types. For qualified switches with shaft and panel seal, use equivalent HS style.

⁵UM switches are made of the same materials and construction as the M style switches. For military switch UM is not required; use M style.

STANDARD OPTIONS

Terminals, military qualified shielding, additional angles of throw, etc., see Options, pages E-9 and E-10.

ADDITIONAL FEATURES

For single shaft switches with spring return, isolated positions, keylocks, see the Features Selection Chart, page E-7.