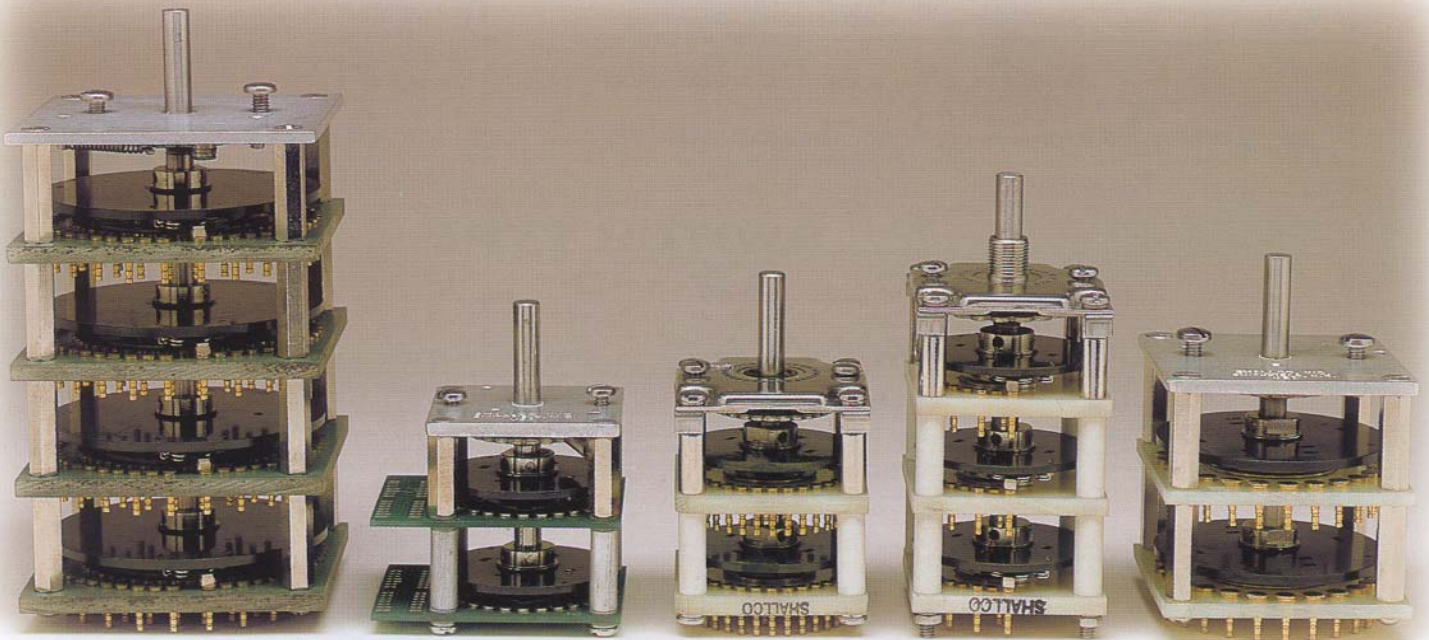


**SHALLCO**  
INCORPORATED

# ROTARY SWITCHES

INDUSTRIAL AND MILITARY GRADE  
OPEN FRAME CONSTRUCTION



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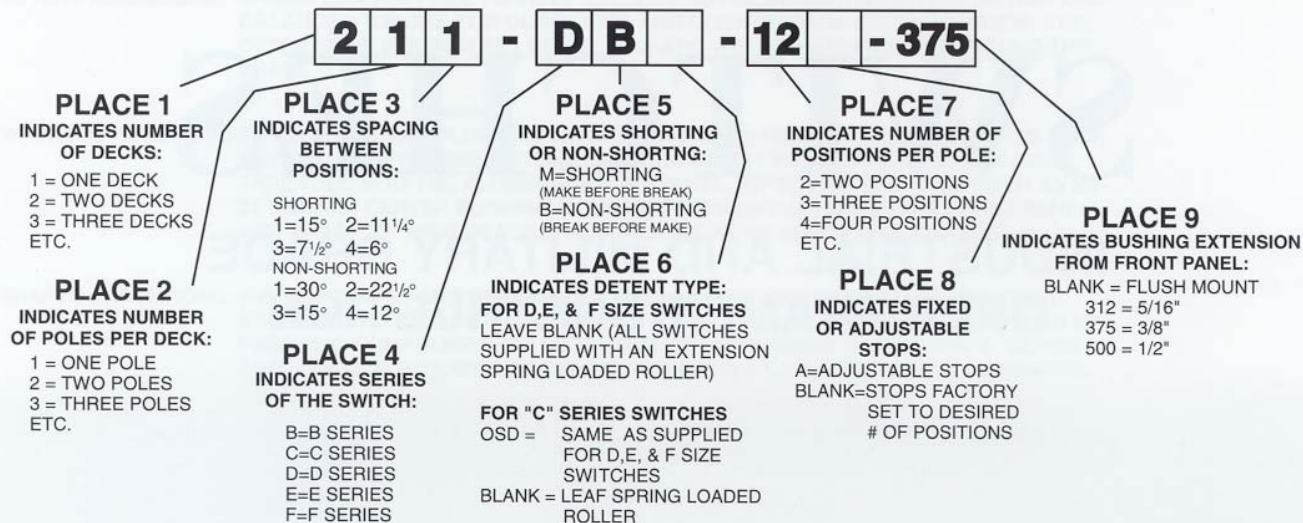
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## ORDERING INFORMATION

(ORDER FORM TO ORDER B, C, C(OSD), D, E & F SERIES SWITCHES)

ORDER BY USING EIGHT-PLACE "SHORTHAND" DESCRIPTION

DESCRIPTION: ROTARY SELECTOR SWITCH, 2 DECK, 1 POLE PER DECK, 30° OF SPACING BETWEEN POSITIONS, D SERIES, NON-SHORTING, 12 FIXED POSITIONS, 3/8" BUSHING MOUNT



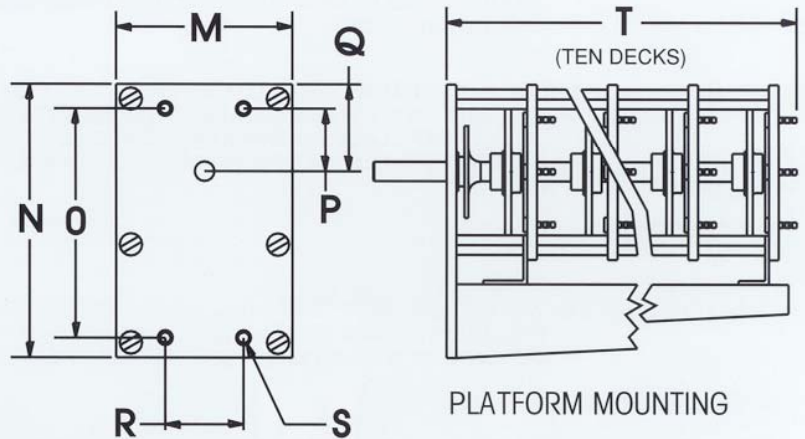
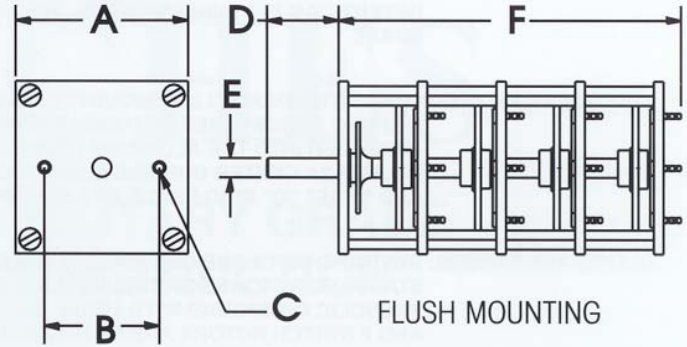
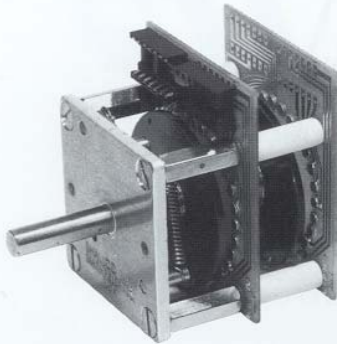
PART NUMBERING TABLE FOR SINGLE DECK SWITCHES SHOWN ON PAGE 5. ADJUST PLACE 1 ACCORDINGLY FOR MULTIPLE DECKS

		SWITCH TYPE						TOLERANCE
		B	C	C <sub>(OSD)</sub>	D	E	F	
<b>DIMENSION</b>	<b>A</b>	1-3/8	1-3/4	1-3/4	2-1/4	2-3/4	2-15/16	± 1/64
	<b>B</b>	1.000	1.375	1.375	1.500	1.500	1.500	± .005
	<b>C</b>	6-32	6-32	6-32	8-32	8-32	8-32	----
	<b>D</b>	15/16	15/16	15/16	15/16	15/16	15/16	± 1/32
	<b>E</b>	.250	.250	.250	.250	.250	.250	± .001
	<b>F</b> SINGLE DECK	1-13/32	1-5/16	1-13/32	1-13/32	1-13/32	1-13/32	± 1/16
	<b>F</b> DECK ADDER	7/8	7/8	7/8	1-1/32	1-1/32	1-1/32	± 1/16
	<b>G</b>	1/8 D.	1/8 D.	1/8 D.	1/8 D.	1/8 D.	1/8 D.	± .005
	<b>H</b>	17/32	17/32	17/32	17/32	17/32	17/32	± 1/64
	<b>J</b>	3/8-32	3/8-32	3/8-32	3/8-32	3/8-32	3/8-32	----
	<b>K</b>	3/32	1/8	3/32	3/32	3/32	3/32	± 1/64
	<b>L</b>	3/8	3/8	3/8	3/8	3/8	3/8	± 1/64
	<b>M</b>	----	1-7/8	1-7/8	2-1/4	2-3/4	3	± 1/64
	<b>N</b>	----	3-1/4	3-1/4	3-1/2	5-1/8	5-1/4	± 1/64
	<b>O</b>	----	1.625	1.625	2.937	3.125	3.250	± .005
	<b>P</b>	----	0	0	13/16	1/2	1/2	± 1/64
	<b>Q</b>	----	7/8	7/8	1-1/8	1-3/8	1-1/2	± 1/64
<b>R</b>	----	1.375	1.375	1.000	2.250	2.250	± .005	
<b>S</b>	----	6-32	6-32	10-32	10-32	10-32	----	
<b>T</b>	----	9-9/32	9-9/32	10-11/16	10-11/16	10-11/16	± 1/8	

OUTLINE DRAWING DIMENSION CHART

# series B, C(OSD), D, E, & F

## ROTARY SELECTOR SWITCHES



### GENERAL SPECIFICATIONS

MEETS OR SURPASSES THE REQUIREMENTS OF MIL-S-3786

#### ELECTRICAL:

- CURRENT CARRYING CAPACITY - 10 AMPS
- CURRENT SWITCHING CAPACITY - UP TO 2 AMPS
- CONTACT RESISTANCE - INITIAL - .005 OHMS MAX.
- CONTACT RESISTANCE - AFTER LIFE - .010 OHMS MAX.
- INSULATION RESISTANCE - 50,000 MEGOHMS
- DIELECTRIC WITHSTANDING VOLTAGE - 1500 VRMS
- DIELECTRIC WITHSTANDING VOLTAGE - AFTER LIFE - 1000 VRMS

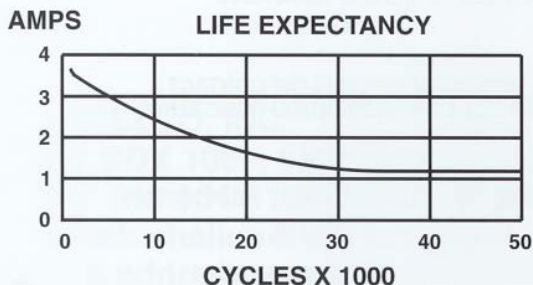
#### MECHANICAL:

- ROTATIONAL LIFE : 50,000 CYCLES\* MIN. @ .250 AMPS @ 85° C
- STOP TORQUE - 50 IN-LBS
- TYPE CONSTRUCTION - OPEN FRAME
- STOPS - FACTORY SET TO DESIRED # OF POSITIONS

#### OPTIONAL FEATURES

- 3/8-32 UNEF -2A BUSHING MOUNT WITH ANTI-ROTATION PIN
- SHAFT AND FRONT PANEL "O" RING SEALS
- SPRING RETURN
- CONCENTRIC SHAFTS
- PROGRESSIVE SHORTING BASED ON 24 OR 32 EQUALLY SPACED CONTACTS

\* ONE CYCLE=ONE FULL CW AND ONE FULL CCW ROTATION

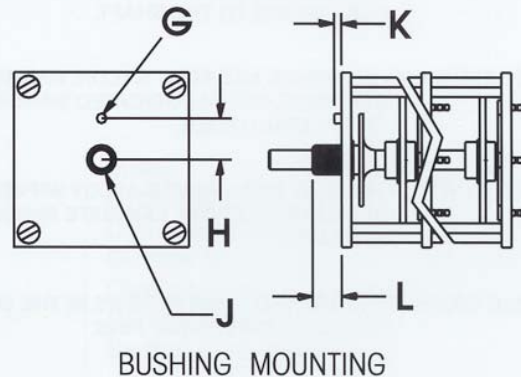


UNLESS OTHERWISE SPECIFIED, PLATFORMS ARE SUPPLIED FOR :

\* 1 & 2 POLE SWITCHES, 10 DECKS AND UP

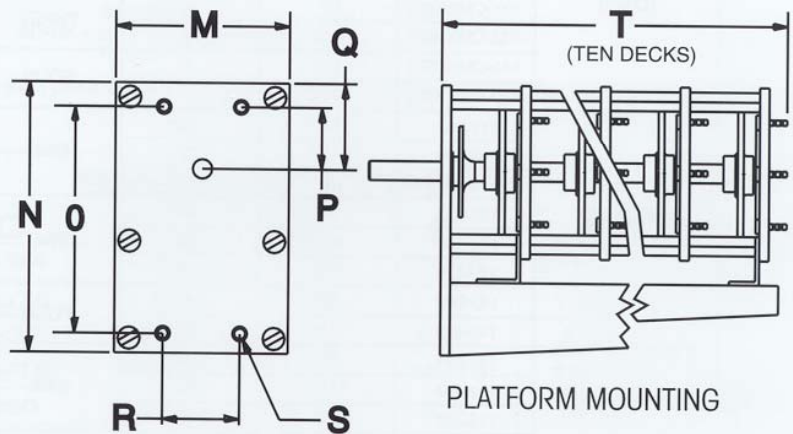
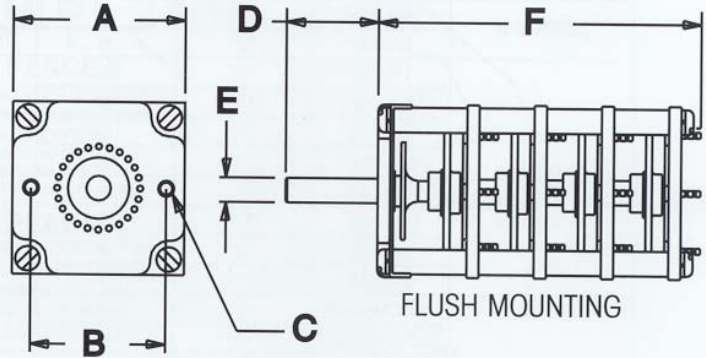
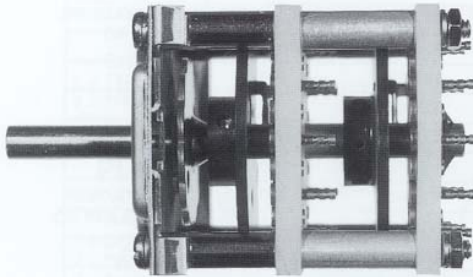
\* 3 & 4 POLE SWITCHES, 9 DECKS AND UP

PLATFORM SUPPORT IS NOT REQUIRED FOR SERIES B SWITCHES



# series C

## ROTARY SELECTOR SWITCHES



### GENERAL SPECIFICATIONS

MEETS OR SURPASSES THE REQUIREMENTS OF MIL-S-3786

### ELECTRICAL:

CURRENT CARRYING CAPACITY - 10 AMPS  
 CURRENT SWITCHING CAPACITY - UP TO 2 AMPS  
 CONTACT RESISTANCE - INITIAL - .005 OHMS MAX.  
 CONTACT RESISTANCE - AFTER LIFE - .010 OHMS MAX.  
 INSULATION RESISTANCE - 50,000 MEGOHMS  
 DIELECTRIC WITHSTANDING VOLTAGE - 1500 VRMS  
 DIELECTRIC WITHSTANDING VOLTAGE AFTER LIFE - 1000 VRMS

### MECHANICAL:

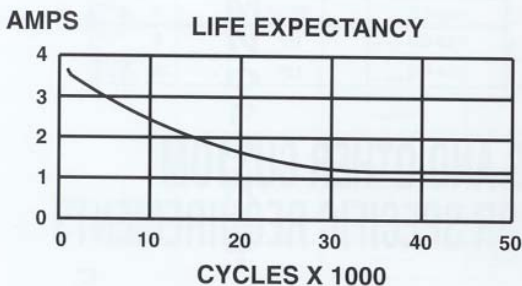
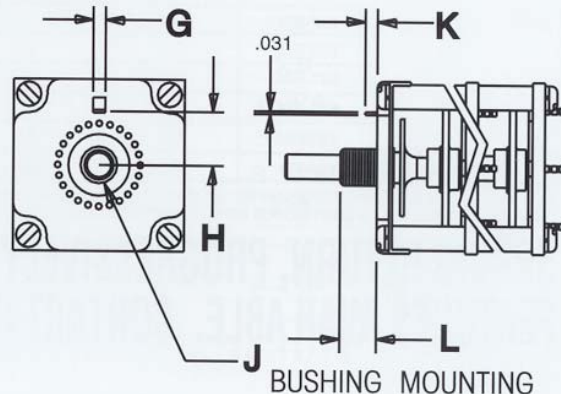
ROTATIONAL LIFE: 50,000 CYCLES\* MIN. @ .250 AMPS @ 85° C  
 STOP TORQUE - 50 IN-LBS  
 TYPE CONSTRUCTION - OPEN FRAME  
 ADJUSTABLE STOPS - TO ANY DESIRED POSITION

### OPTIONAL FEATURES

- 3/8-32 UNEF -2A BUSHING MOUNT WITH ANTI-ROTATION PIN
- PROGRESSIVE SHORTING BASED ON 24 OR 32 EQUALLY SPACED CONTACTS

\* ONE CYCLE=ONE FULL CW AND ONE FULL CCW ROTATION

UNLESS OTHERWISE SPECIFIED, PLATFORMS ARE SUPPLIED FOR:  
 \* 1 & 2 POLE SWITCHES, 10 DECKS AND UP  
 \* 3 & 4 POLE SWITCHES, 9 DECKS AND UP  
 STANDARD SWITCHES ABOVE 5 DECKS ARE PROVIDED WITH 4 REAR SUPPORT SPACERS TAPPED 6-32 UNC-2B X 1/4 DEEP (ADD 21/64" TO TOTAL LENGTH WHEN REAR SUPPORT SPACERS ARE SUPPLIED)



SEE TABLE ON PAGE 2 FOR OUTLINE DIMENSIONS

## PART NUMBERING TABLE

(PARTIAL PART NUMBERS SHOWN FOR SINGLE DECK SWITCHES)  
 (SEE COMPLETE ORDERING INFORMATION GUIDE ON PAGE 2 )

SWITCH TYPE	SHORTING			NUMBER OF POLES	NON-SHORTING		
	PART NO. (SINGLE DECK)	SPACING BETWEEN POSITIONS	MAXIMUM POSITIONS PER POLE		PART NO. (SINGLE DECK)	SPACING BETWEEN POSITIONS	MAXIMUM POSITIONS PER POLE
SERIES B	111-BM	15°	24*	ONE	111-BB	30°	12*
	121-BM	15°	11	TWO	121-BB	30°	6
SERIES C	111-CM	15°	24*	ONE	111-CB	30°	12**
	112-CM	11¼°	32*		112-CB	22½°	16**
	121-CM	15°	11	TWO	121-CB	30°	6
	122-CM	11¼°	15		122-CB	22½°	8
	131-CM	15°	5	THREE	131-CB	30°	3
	132-CM	11¼°	7		132-CB	22½°	4
	141-CM	15°	5	FOUR	141-CB	30°	3
	142-CM	11¼°	7		142-CB	22½°	4
SERIES C (OSD)	111-CM(OSD)	15°	24*	ONE	111-CB(OSD)	30°	12**
	112-CM(OSD)	11¼°	32*		112-CB(OSD)	22½°	16**
	121-CM(OSD)	15°	11	TWO	121-CB(OSD)	30°	6
	122-CM(OSD)	11¼°	15		122-CB(OSD)	22½°	8
	131-CM(OSD)	15°	5	THREE	131-CB(OSD)	30°	3
	132-CM(OSD)	11¼°	7		132-CB(OSD)	22½°	4
	141-CM(OSD)	15°	5	FOUR	141-CB(OSD)	30°	3
	142-CM(OSD)	11¼°	7		142-CB(OSD)	22½°	4
SERIES D	111-DM	15°	24**	ONE	111-DB	30°	12**
	112-DM	11¼°	32		112-DB	22½°	16**
	113-DM	7½°	48		113-DB	15°	24**
	121-DM	15°	24**	TWO	121-DB	30°	12**
	122-DM	11¼°	32		122-DB	22½°	16**
	123-DM	7½°	23		123-DB	15°	12
	141-DM	15°	11	FOUR	141-DB	30°	6
	142-DM	11¼°	15		142-DB	22½°	8
SERIES E	111-EM	15°	24**	ONE	111-EB	30°	12**
	112-EM	11¼°	32		112-EB	22½°	16**
	113-EM	7½°	48		113-EB	15°	24**
	121-EM	15°	24**	TWO	121-EB	30°	12**
	122-EM	11¼°	32		122-EB	22½°	16**
	123-EM	7½°	48		123-EB	15°	24**
	141-EM	15°	11	FOUR	141-EB	30°	6
	142-EM	11¼°	15		142-EB	22½°	8
	143-EM	7½°	23	SIX	143-EB	15°	12
	161-EM	15°	7		161-EB	30°	4
	162-EM	11¼°	9		162-EB	22½°	5
	163-EM	7½°	15	EIGHT	163-EB	15°	8
	181-EM	15°	5		181-EB	30°	3
	182-EM	11¼°	7		182-EB	22½°	4
183-EM	7½°	11	EIGHT	183-EB	15°	6	
SERIES F	114-FM	6°		60	ONE	114-FB	12°

\*MAXIMUM NUMBER OF POSITIONS MAY BE USED WITH CONTINUOUS ROTATION ONLY.  
 \*\*NORMALLY SUPPLIED AS CONTINUOUS ROTATION; STOPS AVAILABLE UPON REQUEST.

**SPRING RETURN, PROGRESSIVELY SHORTING AND OTHER CUSTOM FEATURES AVAILABLE. CONTACT FACTORY FOR SPECIFIC REQUIREMENTS**



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## SWITCH CONSTRUCTION

### SERIES B, C(OSD), D, E, & F

**DETENT MECHANISM:** SPRING LOADED FREE TURNING ROLLER PROVIDES POSITIVE DETENT ACTION AND BALANCED TORQUE FOR CLOCKWISE AND COUNTERCLOCKWISE ROTATION. THE DETENT CAM IS STAINLESS STEEL, HELI-ARC WELDED WITH A BEAD AROUND THE SHAFT.

**VARIABLE PANEL MOUNTING:** STANDARD FLUSH MOUNTING IS ACCOMPLISHED WITH EITHER TWO 6-32 OR 8-32 UNC SCREWS (SEE OUTLINE DRAWING CHART FOR CORRECT SCREW SIZE) THREADED INTO THE ALUMINUM FRONT PANEL. OPTIONAL FEATURES SUCH AS 3/8-32 UNEF-2A CENTER BUSHING MOUNTING WITH ANTI-ROTATION PIN, FRONT PANEL AND SHAFT "O" RING SEALS ARE AVAILABLE AT AN ADDITIONAL CHARGE.

**SHAFTS AND ROTORS:** SWITCH SHAFTS ARE CENTERLESS GROUND, 1/4" DIAMETER STAINLESS STEEL. STANDARD ROTORS FOR THE SERIES C, C(OSD), D, & E SWITCHES ARE MOLDED OF PHENOLIC COMPOUND WITH METAL INSERT FOR PINNING TO THE SHAFT. SERIES B AND F SWITCH ROTORS ARE FABRICATED FROM A LAMINATED EPOXY LAMINATES.

**BEARINGS:** STANDARD BEARINGS ARE SPLIT NYLON, FRONT AND REAR. LUBRICATED-FOR-LIFE BALL BEARINGS, SELF-LUBRICATED SINTERED BRASS AND OTHER TYPES ARE AVAILABLE ON SPECIAL ORDER.

**WIPERS AND CONTACT PANELS:** DUAL SILVER-ALLOY WIPERS' TORSION BAR DESIGN FOR SERIES C(OSD), D, E, AND F SWITCHES MAINTAINS LOW CONTACT RESISTANCE. REDUNDANT SILVER ALLOY LEAF BLADE WIPERS ARE PROVIDED ON THE B SERIES SWITCHES. EPOXY LAMINATE PANELS PROVIDE 50,000 MEGOHM INSULATION RESISTANCE FOR LIFE.

### SERIES C

**DETENT MECHANISM:** A STEEL LEAF SPRING AND ROLLER PROVIDE POSITIVE DETENT ACTION AND BALANCED TORQUE FOR CLOCKWISE AND COUNTERCLOCKWISE ROTATION. THE DETENT CAM IS STAINLESS STEEL, HELI-ARC WELDED WITH A BEAD AROUND THE SHAFT.

**TWO-PIECE FRONT PANEL VARIABLE MOUNTING:** STANDARD FLUSH MOUNTING IS ACCOMPLISHED WITH TWO 6-32 UNC MOUNTING INSERTS ANCHORED BETWEEN TWO SECTIONS OF THE STAINLESS STEEL FRONT PANEL. OPTIONAL FEATURES SUCH AS 3/8-32 UNEF-2A CENTER-BUSHING MOUNTING WITH ANTI-ROTATIONAL TAB, FRONT PANEL AND SHAFT "O" RING SEALS ARE AVAILABLE AT LITTLE EXTRA COST.

**SHAFTS AND ROTORS:** SWITCH SHAFTS ARE CENTERLESS GROUND, 1/4" DIAMETER STAINLESS STEEL. STANDARD ROTORS ARE MOLDED OF PHENOLIC COMPOUND WITH METAL INSERTS FOR PINNING TO THE SHAFT.

**BEARINGS:** STANDARD BEARINGS ARE SPLIT NYLON, FRONT AND REAR. LUBRICATED-FOR-LIFE BALL BEARINGS, SELF-LUBRICATED SINTERED BRASS AND OTHER TYPES ARE AVAILABLE ON SPECIAL ORDER.

**WIPERS AND CONTACT PANELS:** DUAL SILVER-ALLOY WIPERS' TORSION BAR DESIGN MAINTAINS LOW CONTACT RESISTANCE. EPOXY LAMINATE PANELS PROVIDE 50,000 MEGOHM INSULATION RESISTANCE FOR LIFE.

**ADJUSTABLE STOPS:** BY REMOVING FOUR SCREWS IN THE OUTER FRONT PANEL, THE CUSTOMER MAY RE-POSITION THE ADJUSTABLE STOP PINS.