

# C&K 3 Series Thumbwheel Switches



## Features/Benefits

- Most complete product offering in the industry
- Spacers available to fit most panel cutouts
- Front or rear mounting options
- Illuminated models available

## Typical Applications

- Test & measurement equipment
- Industrial equipment
- Computer devices

## Specifications

### CONTACT RATING:

CARRY: 1 AMP continuous.  
SWITCH: 100 mA max.

OPERATING VOLTAGE: 50 mV to 28 V DC or 120 V AC.

ELECTRICAL LIFE: 100,000 actuations.

CONTACT RESISTANCE: Below 100 m Ω typ. initial @ 2-4 V DC, 100 mA.

INSULATION RESISTANCE: 10<sup>9</sup> Ω min.

DIELECTRIC STRENGTH: 500 Vrms min. @ sea level between common terminal and any output.

OPERATING TEMPERATURE: -10°C to 65°C.

## Materials

HOUSING: ABS plastic.

THUMBWHEEL: ABS plastic.

ROTOR CONTACTS: Precious metal on copper alloy.

STATOR CONTACTS: Hard gold over nickel over copper on epoxy fiberglass.

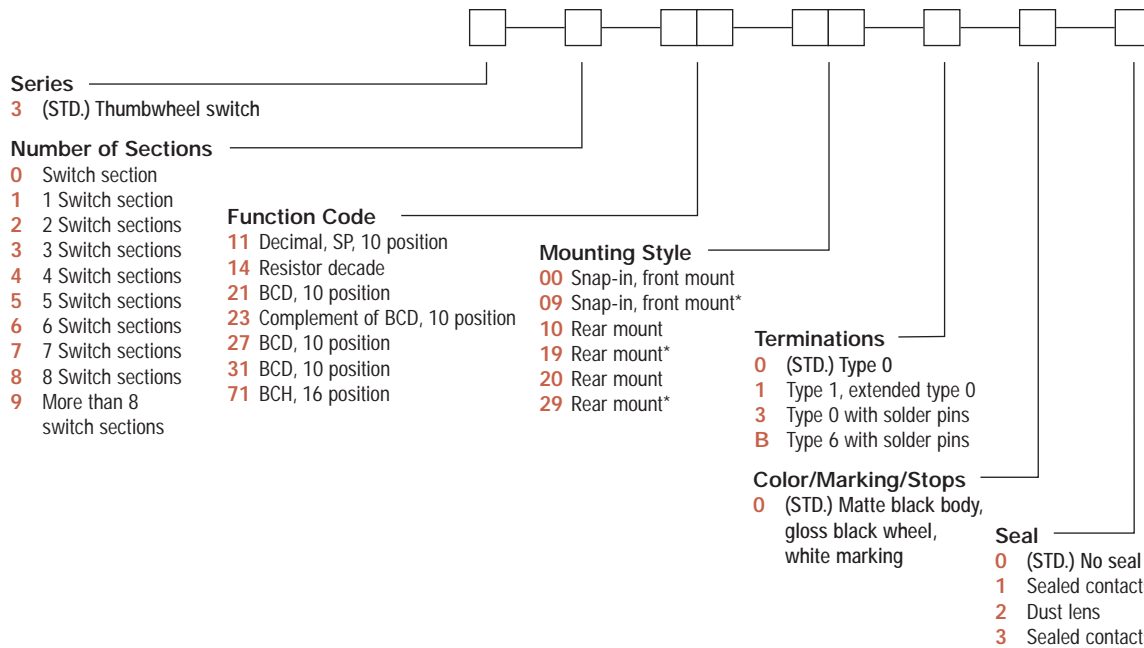
**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages M-9 thru M-12. For additional options not shown in catalog, consult Customer Service Center.

Consult factory for illumination availability.

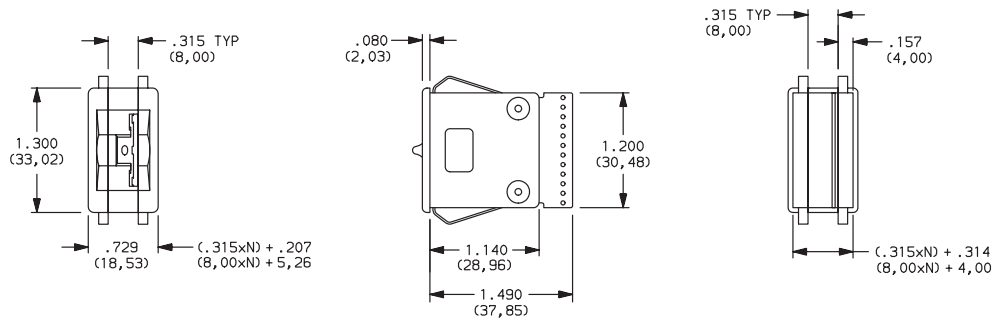
Thumbwheel & Pushwheel



\*X9 mounting styles must be ordered with '0' number of sections.

## SERIES

### 3 (STD.) THUMBWHEEL SWITCHES



## NUMBER OF SECTIONS

- 0** Switch section only, no assembly. Blank bodies are considered sections; endplates are not sections. Must be ordered with 09 or 19 mounting style options, see pages M-10 and M-11.
- 1-8** Number of switch sections in assembly, includes endplates.
- 9** More than 8 switch sections, specify on CONFIGURATION FORM, page M-15 and consult Customer Service Center.

NOTE: Endplates and blank sections available separately, see pages M-13 and M-14.

## FUNCTION CODE

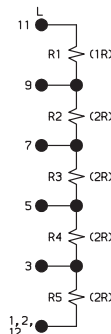
- 11** DECIMAL-1 POLE; 10 POSITION
- 14** RESISTOR DECADE: 1-2-2-2-2 CODE (RESISTORS NOT SUPPLIED)
- 21** BCD 1-2-4-8; 10 POSITION

W H E E L	SIGNALS CONNECTED TO COMMON SIGNAL C										
	0	1	2	3	4	5	6	7	8	9	C
0	●										●
1		●									●
2			●								●
3				●							●
4					●						●
5						●					●
6							●				●
7								●			●
8									●		●
9										●	●
	2	3	4	5	6	7	8	9	10	11	12
	TERM. LOCATION										

Available Terminations: 0, 1, 3  
See fig. 1, page M-12.

W H E E L	SWITCH CIRCUIT										
	0	1	2	3	4	5	6	7	8	9	C
0	●										●
1	●	●									●
2	●	●	●								●
3	●	●	●	●							●
4	●	●	●	●	●						●
5	●	●	●	●	●	●					●
6	●	●	●	●	●	●	●				●
7	●	●	●	●	●	●	●	●			●
8	●	●	●	●	●	●	●	●	●		●
9	●	●	●	●	●	●	●	●	●	●	●
	11	9	7	5	3	1,2					
	TERM. LOCATION										

Available Terminations: 1  
See fig. 1, page M-12.



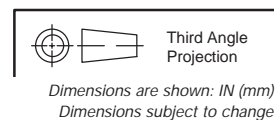
W H E E L	SIGNALS CONN. TO COMM. SIG. C				
	1	2	4	8	C
0					●
1	●				●
2	●	●			●
3	●	●	●		●
4	●	●	●	●	●
5	●	●	●	●	●
6	●	●	●	●	●
7	●	●	●	●	●
8	●	●	●	●	●
9	●	●	●	●	●
	3	5	7	11	9
	TERM. LOCATION				

Available Terminations: 0, 1, 3  
See fig. 1, page M-12.

Thumbwheel & Pushwheel



NOTE: For terminal location diagram, see page M-12.



# C&K 3 Series Thumbwheel Switches

## FUNCTION CODE

**23** COMPLEMENT OF BCD 1-2-4-8;  
10 POSITION

W H E E L	SIGNALS CONN. TO COMM. SIG. C			
	1	2	4	8
0	●	●	●	●
1	●	●	●	●
2	●	●	●	●
3	●	●	●	●
4	●	●	●	●
5	●	●	●	●
6	●	●	●	●
7	●	●	●	●
8	●	●	●	●
9	●	●	●	●
	3	9	11	5
	TERM. LOCATION			

Available Terminations: 0, 1, 3  
See fig. 1, page M-12.

**27** BCD 1-2-4-8; 10 POSITION

W H E E L	SIGNALS CONN. TO COMM. SIG. C			
	1	2	4	8
0	●	●	●	●
1	●	●	●	●
2	●	●	●	●
3	●	●	●	●
4	●	●	●	●
5	●	●	●	●
6	●	●	●	●
7	●	●	●	●
8	●	●	●	●
9	●	●	●	●
	4	5	1	2
	TERM. LOCATION			

Available Terminations: B  
See fig. 2, page M-12.

**31** BCD 1-2-4-8; 10 POSITION

W H E E L	SIGNALS CONN. TO COMM. SIG. C			
	1	2	4	8
0	●	●	●	●
1	●	●	●	●
2	●	●	●	●
3	●	●	●	●
4	●	●	●	●
5	●	●	●	●
6	●	●	●	●
7	●	●	●	●
8	●	●	●	●
9	●	●	●	●
	2	3	11	9
	TERM. LOCATION			

Available Terminations: 0, 1, 3  
See fig. 1, page M-12.

**71** BINARY CODED HEXADECIMAL,  
16 POSITION

W H E E L	SIGNALS CONN. TO COMM. SIG. C			
	1	2	4	8
0	●	●	●	●
1	●	●	●	●
2	●	●	●	●
3	●	●	●	●
4	●	●	●	●
5	●	●	●	●
6	●	●	●	●
7	●	●	●	●
8	●	●	●	●
9	●	●	●	●
A	●	●	●	●
B	●	●	●	●
C	●	●	●	●
D	●	●	●	●
E	●	●	●	●
F	●	●	●	●
	3	5	7	11
	TERM. LOCATION			

Available Terminations: 0, 1, 3  
See fig. 1, page M-12.

NOTE: For terminal location diagram, see page M-12.

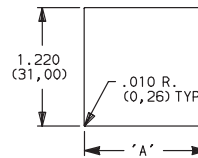
## MOUNTING STYLE

### Type 0 Snap-In Front Mount

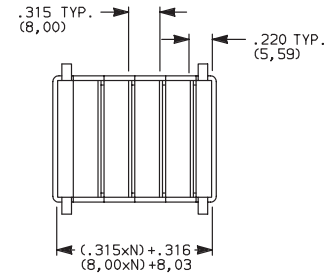
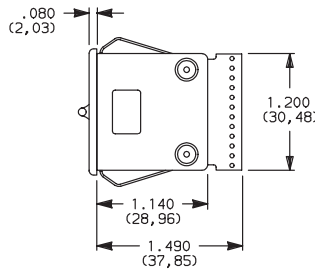
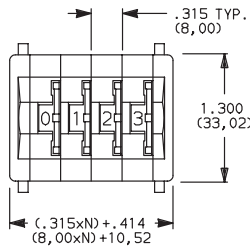
MOUNTING STYLE	DIM. 'A'
00	$(.315 \times N) + .326$ $(8.00 \times N) + (8.28)$

N = Number of sections.  
Recommended panel thickness:  
0.46-.125  
(1.16-3.18)

#### PANEL MOUNTING



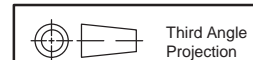
**00** SWITCH ASSEMBLY W/ ENDPLATES--.315 (8,00) SECTION PITCH



N = Number of sections.

**09** SWITCH SECTION ONLY--UNASSEMBLED WITHOUT ENDPLATES OR SPACERS  
(Must be ordered with number of sections option "0", see Page M-9.)

NOTE: Endplates, blank sections, spacers  
and assembly hardware available separately, see pages M-13 and M-14.



Third Angle  
Projection

Dimensions are shown: IN (mm)  
Dimensions subject to change

## MOUNTING STYLE

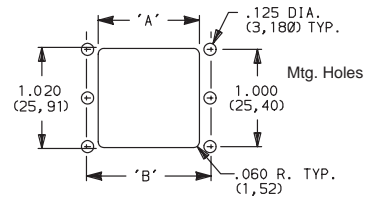
### Type 1 Rear Mount

MOUNTING STYLE	DIM. 'A'	DIM. 'B'
10	$(.350 \times N) + .340$ (8,89 x N) + (8,64)	$(.350 \times N) + .560$ (8,89 x N) + (14,22)

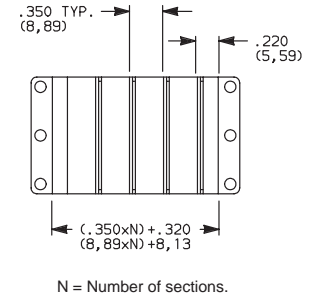
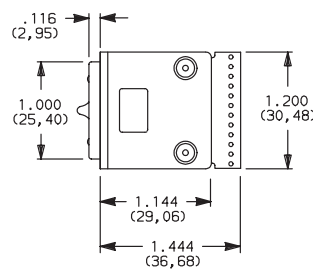
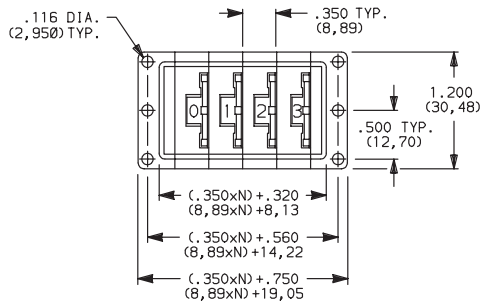
N = Number of sections.

Recommended panel thickness:  
0.46-.125  
(1,16-3,18)

#### PANEL MOUNTING



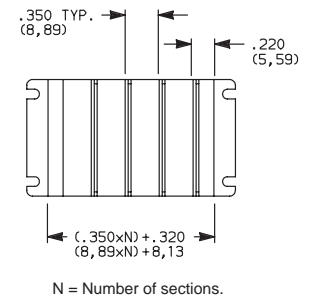
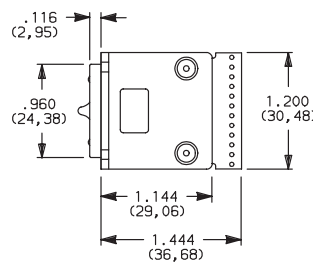
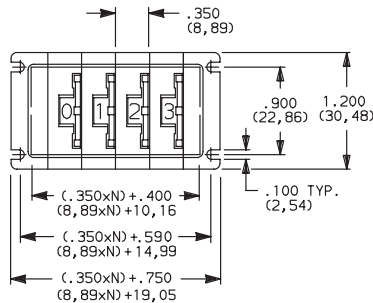
### 10 SWITCH ASSEMBLY W/ ENDPLATES--350 (8,89) SECTION PITCH



### 19 SWITCH SECTION ONLY--UNASSEMBLED WITHOUT ENDPLATES OR SPACERS (Must be ordered with number of sections option "0", see Page M-9.)

### Type 2 Rear Mount

### 20 SWITCH ASSEMBLY W/ ENDPLATES--350 (8,89) SECTION PITCH



### 29 SWITCH SECTION ONLY--UNASSEMBLED WITHOUT ENDPLATES OR SPACERS (Must be ordered with number of sections option "0", see Page M-9.)

### Type 3 Snap1-in Front Mount

### 09 SWITCH SECTION ONLY--UNASSEMBLED WITHOUT ENDPLATES OR SPACERS (Must be ordered with number of sections option "0", see Page M-9.)



NOTE: Endplates, blank sections, spacers and assembly hardware available separately, see pages M-13 and M-14.

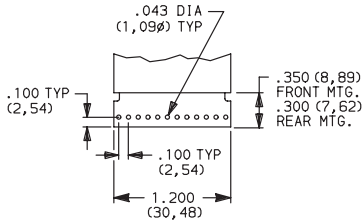


Dimensions are shown: IN (mm)  
Dimensions subject to change

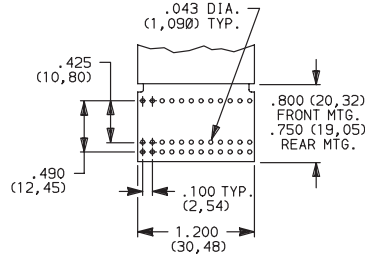
# C&K 3 Series Thumbwheel Switches

## TERMINATIONS

### 0 (STD.) TYPE 0

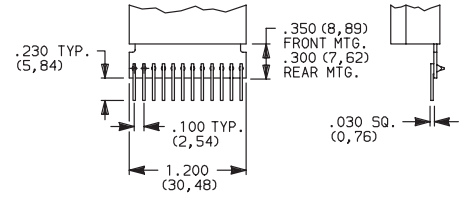


### 1 TYPE 1, EXTENDED TYPE 0



Signal traces cut except for common(s).

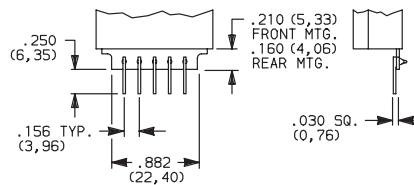
### 3 TYPE 0 WITH SOLDER PINS



### 9 ANY COMBINATION OF TERMINATION CONFIGURATIONS OR SPECIAL TERMINATIONS.

Specify on configuration form, page M-15 and consult Customer Service Center.

### B TYPE 6 WITH SOLDER PINS



PC Board 1/32" (0,79) thick.

**NOTE:** All terminal holes shown may not be present for all function codes, consult Customer Service Center. Terminal connector available for termination options 0 & 1, see page M-14.

## Terminal Location Numbers

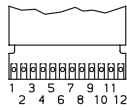


FIG. 1

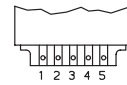


FIG. 2



**NOTE:** See function codes, pages M-9 and M-10, for signal locations.

## COLOR/MARKING/STOPS

### 0 (STD.) MATTE BLACK HOUSING (Gloss black wheel with white characters; no stops)

**NOTE:** Stop pins are available separately, see page M-14.

Thumbwheel & Pushwheel



M

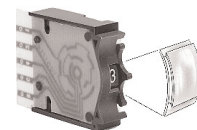
## SEAL

### 0 (STD.) UNSEALED SWITCHING CONTACTS.

**1 SEALED SWITCHING CONTACTS.** (Sealing is by means of an o-ring rotary seal and a cured-in-place elastomer gasket. Switching contact area is protected from moisture, oil, and airborne contaminants.)

**2 DUST LENS.** (Protects the character face of the wheel from abrasion and dirt.)

**3 SEALED SWITCHING CONTACTS AND DUST LENS**



Dust Lens



Third Angle Projection

Dimensions are shown: IN (mm)  
Dimensions subject to change

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# C&K 3 Series Thumbwheel Switches

## AVAILABLE HARDWARE

Blank sections, Type 0 & 3,  
.315 THK.



PART NO.

413602000 W/RIB-BLACK  
413609000 W/RIB-GRAY  
400502000 W/RIB & W/OUT SPRINGS-BLACK  
400509000 W/RIB & W/OUT SPRINGS-GRAY

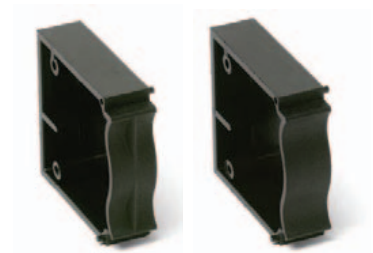
Blank sections, Front mount, Type 0 & 3,  
.315 THK.



PART NO.

413502000 PLAIN-BLACK  
413509000 PLAIN-GRAY  
400702000 PLAIN & W/OUT SPRINGS-BLACK  
400709000 PLAIN & W/OUT SPRINGS-GRAY

Blank sections, Rear mount, Type 1,  
.350 THK.



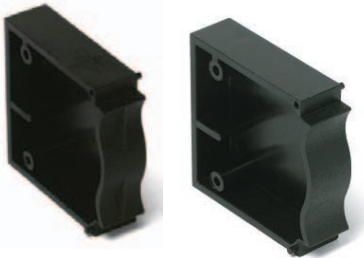
4006

4008

PART NO.

400602000 W/RIB-BLACK  
400609000 W/RIB-GRAY  
400802000 PLAIN-BLACK  
400809000 PLAIN-GRAY

Blank sections, Rear mount, Type 2,  
.350 THK.



4734

4733

PART NO.

473402000 W/RIB-BLACK  
473409000 W/RIB-GRAY  
473302000 PLAIN-BLACK  
473309000 PLAIN-GRAY

End plates, Front mount, Type 0



PART NO.

413402000 BLACK  
413409000 GRAY

Two required for complete assembly.

End plates, Rear mount, Type 1



PART NO.

400402000 BLACK  
400409000 GRAY

Two required for complete assembly.

End plates, Rear mount, Type 2



PART NO.

473202000 BLACK  
473209000 GRAY

Two required for complete assembly.

Spacers, Front mount, Type 0 & 3, .078 THK.  
(Makes section pitch 10mm)



PART NO.

410802000 BLACK  
410809000 GRAY

Stop pins



PART NO.

402900000

Thumbwheel & Pushwheel



M

# C&K 3 Series Thumbwheel Switches

## AVAILABLE HARDWARE

Terminal connector



605A00000



605A02000

PART NO.

605A00000 PC

605A02000 SOLDER LUG

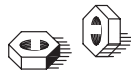
Fits 0 & 1 terminations only.

Screws for field assembly of thumbwheel switches  
(2 screws needed per assembly + 403500000 nuts)

SCREW PART NUMBER (0-80 UNF THD. SIZE)	NUMBER OF SECTIONS IN ASSEMBLY	
	FRONT MOUNTING	REAR MOUNTING
	MTG. STYLE - 00	MTG. STYLE - 10
412700000	1-2	1-2
412701000	3-4	3
412702000	5-7	4-6
412703000	8-10	7-9
412704000	11-13	10-12
412705000	14-16	13-15

Thumbwheel & Pushwheel

Nut



Two nuts required per assembly and screws.

Nut driver (For 403500000 nut)



PART NO.

403500000

PART NO.

406100652



M

# C&K 3 Series Thumbwheel Switches

## Configuration Form

GRAY SHADED AREAS TO BE FILLED IN BY CUSTOMER SERVICE.

CATALOG PART NO.

**3**

C&K PART NUMBER

C&K PART NUMBER

COMPANY NAME \_\_\_\_\_












CUSTOMER PRINT REVISION:

ADDRESS \_\_\_\_\_ TEL.# \_\_\_\_\_

CUSTOMER CONTACT \_\_\_\_\_ DATE \_\_\_\_\_

DETAILS:

ORIGINATED BY \_\_\_\_\_ SALES REP. \_\_\_\_\_

THUMBWHEEL SECTIONS	NO. OF SEC.	FUNCTION CODE – TERMINATIONS – COLOR/MARKING/STOPS/SEAL – ILLUMINATION <small>ENTER OPTION CODES IN APPROPRIATE BOXES. FUNCTION CODES INCLUDE BLANK SECTIONS (SEE PAGES M-9 &amp; M-10).</small>	DESCRIBE IN APPROPRIATE ROW
	<b>1</b>	3 - <input type="text"/> <input type="text"/> - - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	<b>2</b>	3 - <input type="text"/> <input type="text"/> - - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	<b>3</b>	3 - <input type="text"/> <input type="text"/> - - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	<b>4</b>	3 - <input type="text"/> <input type="text"/> - - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	<b>5</b>	3 - <input type="text"/> <input type="text"/> - - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	<b>6</b>	3 - <input type="text"/> <input type="text"/> - - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	<b>7</b>	3 - <input type="text"/> <input type="text"/> - - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	<b>8</b>	3 - <input type="text"/> <input type="text"/> - - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	<b>9</b>	3 - <input type="text"/> <input type="text"/> - - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	<b>10</b>	3 - <input type="text"/> <input type="text"/> - - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
	<b>11</b>	3 - <input type="text"/> <input type="text"/> - - <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	

Thumbwheel & Pushwheel

**QUALITY CONTROL INSTRUCTIONS**

**PRODUCTION APPROVAL**

**DATE**

**Q.C. APPROVAL**

**DATE**

**REV.**

**INITIALS**

**DATE**

FOR SWITCHES WITH MORE THAN 11 SECTIONS, CONTINUE ON ADDITIONAL SHEETS.

**SPECIAL INSTRUCTIONS OR SPECIFICATIONS:**

SHEET \_\_\_\_ OF \_\_\_\_

