

# 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.

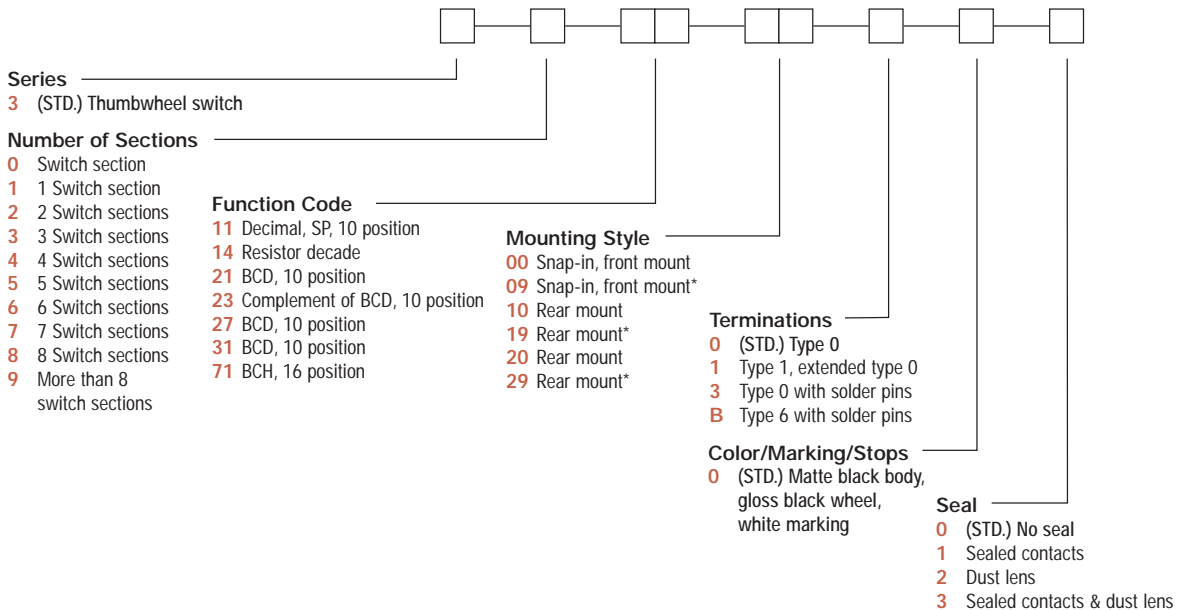
STATOR CONTACTS: Hard gold over nickel over copper  
on epoxy fiberglass.

**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

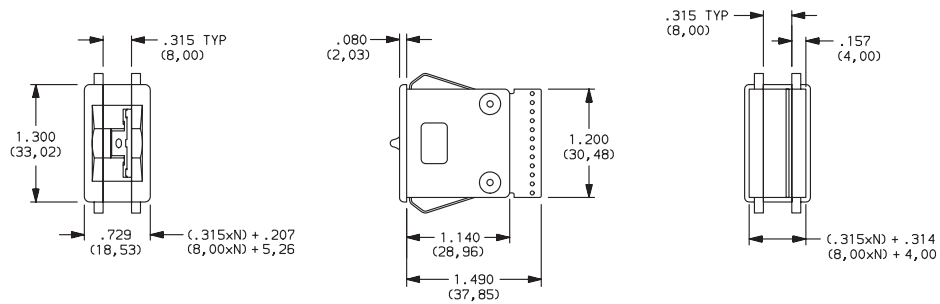
To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages M-9 thru M-12. For additional options not shown in catalog, consult Customer Service Center.

Consult factory for illumination availability.



## 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.

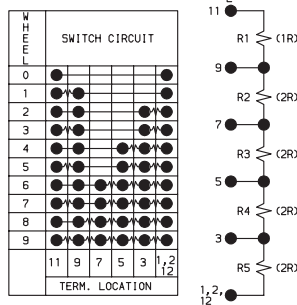
NOTE: Endplates and blank sections available separately, see pages M-13 and M-14.

## 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<br>H<br>E<br>E<br>L | SIGNALS CONNECTED TO COMMON SIGNAL C |   |   |   |   |   |   |   |    |    |    |
|-----------------------|--------------------------------------|---|---|---|---|---|---|---|----|----|----|
|                       | 0                                    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8  | 9  |    |
| 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.

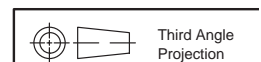


Available Terminations: 1  
See fig. 1, page M-12.

| W<br>H<br>E<br>E<br>L | SIGNALS CONN. TO COMMON SIGNAL 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.

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



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

# C&K 3 Series Thumbwheel Switches

## FUNCTION CODE

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

| W<br>H<br>F<br>mm | SIGNALS CONN. TO |   |    |   |
|-------------------|------------------|---|----|---|
|                   | 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<br>H<br>F<br>mm | SIGNALS CONN. TO |   |   |   |
|-------------------|------------------|---|---|---|
|                   | 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<br>H<br>F<br>mm | SIGNALS CONN. TO |   |    |   |
|-------------------|------------------|---|----|---|
|                   | 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<br>H<br>F<br>mm | SIGNALS CONN. TO |   |   |    |
|-------------------|------------------|---|---|----|
|                   | 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

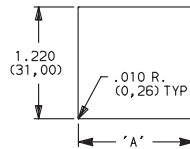
### Type 0 Snap-In Front Mount

| MOUNTING STYLE | DIM. 'A'                                               |
|----------------|--------------------------------------------------------|
| 00             | $(.315 \times N) + .326$<br>$(8,00 \times N) + (8,28)$ |

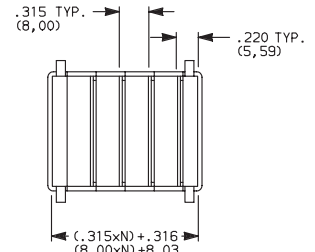
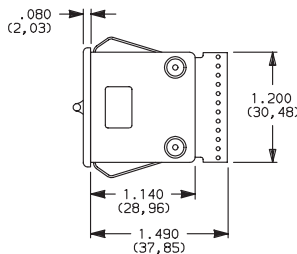
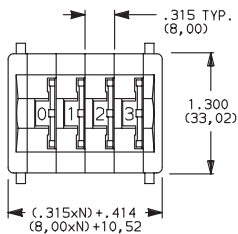
N = Number of sections.

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



M

## MOUNTING STYLE

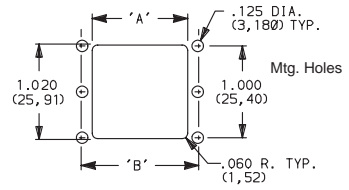
### Type 1 Rear Mount

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

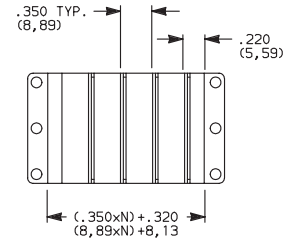
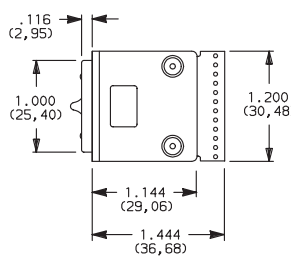
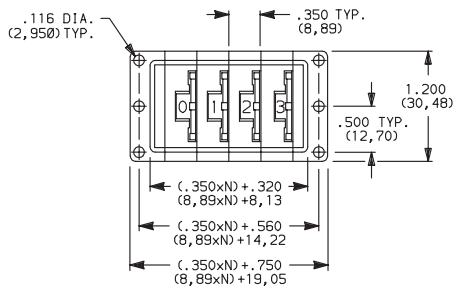
N = Number of sections.

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

### PANEL MOUNTING



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

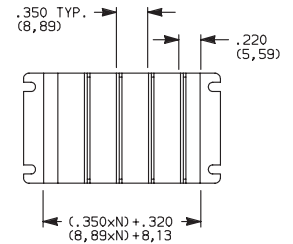
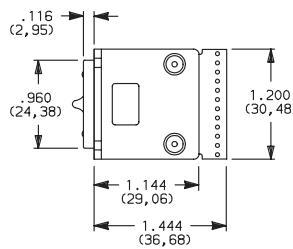
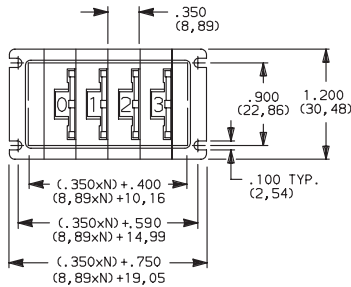


N = Number of sections.

### 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



N = Number of sections.

### 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.

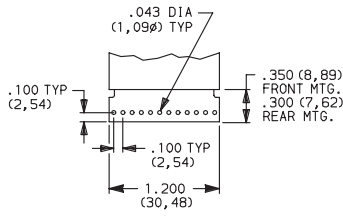


Dimensions are shown: IN (mm)  
Dimensions subject to change

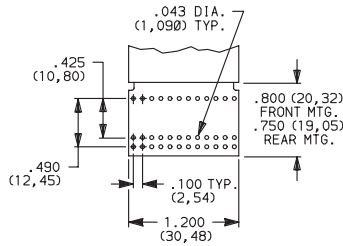
# C&K 3 Series Thumbwheel Switches

## TERMINATIONS

### 0 (STD.) TYPE 0

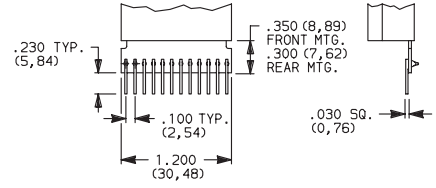


### 1 TYPE 1, EXTENDED TYPE 0



Signal traces cut except for common(s).

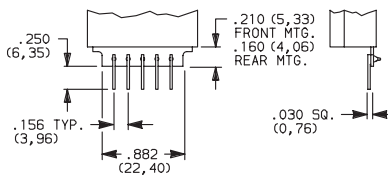
### 3 TYPE 0 WITH SOLDER PINS



### 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

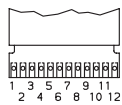


FIG. 1

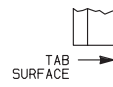


FIG. 2

**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.

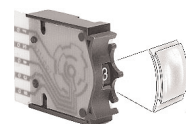
## SEAL

### 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



# 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.

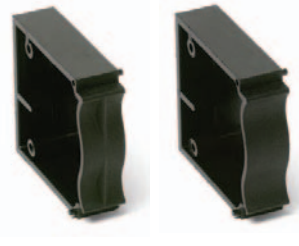


PART NO.

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

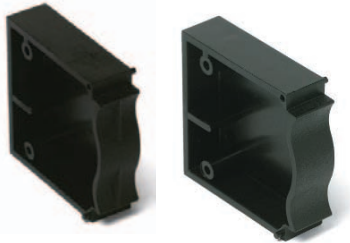
4008

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<br>(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           |

Nut



Two nuts required per assembly and screws.

Nut driver (For 403500000 nut)



PART NO.

403500000

PART NO.

406100652

Thumbwheel & Pushwheel



M

## 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 \_\_\_\_\_












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

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

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

CUSTOMER  
PRINT  
REVISION:

DETAILS:

| THUMBWHEEL SECTIONS                                                                 | NO. OF SEC. | FUNCTION CODE – TERMINATIONS – COLOR/MARKING/STOPS/SEAL – ILLUMINATION<br><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"/>                                                               |                             |

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 \_\_\_\_

