Intro to Switches
Basic Structure of a Switch

- Actuator
- Bushing
- Case
- Movable Contact
- Common Contact
- Stationary Contact
- Common Terminal
- Output Terminal
Electrical Circuit

ON (Make, Close)

OFF (Break, Open)
Poles and Schematics

Single Pole  |  Double Pole  |  Three Pole  |  Four Pole

Footprint

Bottom View of Switch

Pole - Number of circuits the switch can control at one time
Throw - Number of electrical circuits within a pole

Single Throw Switch
ON-NONE-OFF

Double Throw Switch
ON-NONE-ON
Examples of Pole and Throw

- SPST – Single Pole Single Throw
- SPDT – Single Pole Double Throw
- DPST – Double Pole Single Throw
- DPDT – Double Pole Double Throw
- 3PDT – Three Pole Double Throw
- 4PDT – Four Pole Double Throw
Special Circuits
Three-Throw ON-ON-ON

Single Pole Three Throw

2-3, 5-6 connected
2-3, 5-4 connected
2-1, 5-4 connected

Double Pole Three Throw

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

3-5 and 9-11 External Connection must be made during field installation
Alternate and Momentary

Alternate with No Latchdown

Alternate with Latchdown

Momentary
N/O = Normally Open

N/C = Normally Closed
(ON) is momentary

Note: There is a distinction between “throw” and “position”. Among two position switches there are single throw ON-NONE-OFF and double throw ON-NONE-ON.
Isolated Circuits for Illumination

Switch Terminals

Lamp Terminal for Isolated Circuit

Lamp Terminal for Isolated Circuit
Types of Terminals

- SMD
- SMD with Bracket
- Right Angle SMD with Bracket
- Solder Lug
- Wire-wrap
- Straight PC
- Straight PC with Bracket
- Right Angle PC
- Vertical PC
- Screw Lug
- Quick Connect
- Solder Lug
- Solder Lug/Quick Connect

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Types of Actuators

- **Toggles**
  - Standard
  - Flat
  - Locking Lever
  - Cone
  - Large Bat

- **Rockers**

- **Paddles**

- **Pushbuttons**
Types of Actuators

- Slides
- Rotaries
- Keylocks
- DIP Rotaries
Panel Seal

Environmentally Sealed

WT
Sealing at front and back panel meets IP67 and IP60 of IEC60529 Standards.

WB
Conforms to IP67 of IEC60529 Standards at front and behind panel (dust and water protected for temporary immersion).

YB
Dust and oil tight and splashproof panel seal meet IP65 of IEC60529 Standards. Panel seal models come with exterior o-ring.

Panel Seal with O-ring

S2AW
Panel seal model conforms to IP65 of IEC60529 specifications.

Splashproof Boot

S1A with AT402
Boot protects interior parts of the switch as well as the front panel from entry of dust, liquid spills, and splashes.

IP Code
IP60: dust tight but not protected from water.
IP65: dust tight and protected against water jets.
IP67: dust tight and protected against effects of temporary immersion.

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NKK’s Sliding Twin Crossbar (STC) contacts provide the industry’s most reliable contact mechanism.

The award-winning contact mechanism offers benefits unavailable in conventional mechanisms: smooth, positive detent actuation, increased contact stability, and unparalleled logic-level reliability.

These contacts are available in ultra-miniature and subminiature toggles, rockers, pushbuttons, and slides.

Many of NKK’s switches are recognized or certified by UL, cULus, and CSA.

VDE approved models include JP, JW, P, SW3006A, and WR

Other Standards
- UL94V-0 rating on several switch lines
- TV rating (TV-5, TV-8) for JW rocker series
Product Overview

Ultra-Miniature & Subminiature
- Toggles
- Rockers
- Pushbuttons
- Slides
  - A Toggles
  - A Rockers
  - A Pushbuttons
  - A Slides
  - B Toggles
  - B Rockers
  - B Pushbuttons
  - B Slides

Miniature
- Toggles
- Rockers
- Pushbuttons
- Slides
  - M Toggles
  - M Rockers
  - M Pushbuttons
  - M Slides
  - MB2000
  - MB2400
  - C2 Slides
  - M3 Slides
  - C2 Toggles
  - C2 Rockers

Specialty
- Rotaries
- DIP Rotaries
- Terminals
- Slides
  - FR01
  - FR02
  - ND
  - NC0
  - SMA
  - SS
  - SSS
  - CB
  - COB
  - HP02
  - HP03
  - JB
  - JF
  - JF
  - JS

Illuminated
- Toggles
- Rockers
- Pushbuttons
- Slides
  - G Toggles
  - G Rockers
  - G Pushbuttons
  - G Slides
  - JB
  - LP
  - LS, LS2
  - YB
  - YB2
  - CW
  - M2100
  - M2K
  - TL

Standard & High Capacity
- Toggles
- Rockers
- Pushbuttons
- Slides
  - JW, JP
  - WS
  - WE, WR
  - LW
  - S Toggles
  - SW
  - SB, SCB
  - HS, PS, TS

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