NKK® SERIES A TOGGLE SWITCHES

SUPER-SUBMINIATURE/PCB MOUNTING/WASHABLE

TYPICAL SWITCH ORDERING EXAMPLE

A 1 2 A H - G C

POLES	
1	SPST SPDT
2	DPDT SP3T

CIRCUITS			
1	OFF	NONE	ON
2	ON	NONE	ON
3	ON	OFF	ON
5	ON	NONE	(ON)
R	(ON)	NONE	ON
8	(ON)	OFF	(ON)
9	ON	OFF	(ON)
S	(ON)	OFF	ON
4	ON	ON	ON
6	(ON)	ON	(ON)
7	ON	ON	(ON)
( ) = Momentary			

PC TERMINALS	
Standard Length:	
P	Straight
B	Straight w/Bracket
B1	Straight w/Inline Bracket (SP only)
H	Right Angle w/Bracket
V	Vertical w/Bracket
V1	Vertical w/Inline Bracket (SP only)
Long Length:	
W	Straight
D	Straight w/Bracket
R	Right Angle w/ Bracket
T	Vertical w/Bracket

TOGGLES	
A	.394" Bat
E	.394" Flatted
H	.248" Flatted
J	.248" Bat
K	Snap Top for A or B Paddle

PADDLES	
A	Short Paddle for K Toggle
B	Long Paddle for K Toggle
OPTIONAL CAPS	
G	.394" Bat Lever Cap
J	.248" Bat Lever Cap

CAP COLORS		PADDLE COLORS
A	Black	A
B	White	B
C	Red	C
---	Yellow	E
---	Green	F
---	Blue	G
---	Gray	H

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE (A12AH-GC)

SERIES A TOGGLE

.394" Long Bat Toggle

Red .394" Bat Lever Cap

Standard Length Right Angle PC Terminals

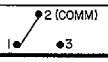
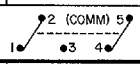
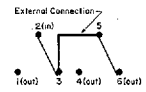
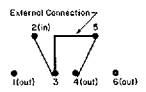
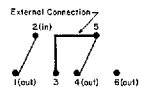
SPDT ON-NONE-ON Circuit

NKK® switches • 7850 E. Gelding Dr. • Scottsdale, AZ 85260 • Phone (602) 991-0942 • Fax (602) 998-1435

NKK® SERIES A TOGGLE SWITCHES

SUPER-SUBMINIATURE/PCB MOUNTING/WASHABLE

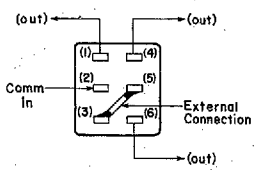
POLES AND CIRCUITS

POLE & THROW	MODEL	TOGGLE POSITION & TERMINAL NUMBERS ( ) = Momentary — Up (Slot)	Center	Down
SPST	A11	OFF	NONE	ON
CONNECTED TERMINALS		OPEN	OPEN	3-1
SCHEMATIC				
SPDT	A12	ON	NONE	ON
	A13	ON	OFF	ON
	A15	ON	NONE	(ON)
	A1R	(ON)	NONE	ON
	A18	(ON)	OFF	(ON)
	A19	ON	OFF	(ON)
	A1S	(ON)	OFF	ON
CONNECTED TERMINALS		2-3	OPEN	2-1
SCHEMATIC				
DPDT	A22	ON	NONE	ON
	A23	ON	OFF	ON
	A25	ON	NONE	(ON)
	A2R	(ON)	NONE	ON
	A28	(ON)	OFF	(ON)
	A29	ON	OFF	(ON)
	A2S	(ON)	OFF	ON
CONNECTED TERMINALS		2-3 5-6	OPEN	2-1 5-4
SCHEMATIC				
SP3T	A24	ON	ON	ON
	A26	(ON)	ON	(ON)
	A27	ON	ON	(ON)
CONNECTED TERMINALS W/O EXTRA CONNECTIONS		2-3 5-6	2-3 5-4	2-1 5-4
SCHEMATICS W/EXTERNAL CONNECTIONS				

Terminal numbers not actually on switch.

THREE-ON POSITIONS

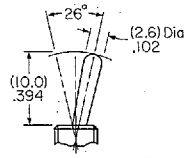
In the manufacture of the A24, A26, and A27 models, a double pole double throw switch is converted to a single pole with 3 independent circuits. **The extra connection shown in the diagram must be made during field installation.** Note that terminal numbers are not actually indicated on the switch.



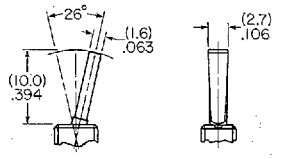
TOGGLES

Standard Finish: Bright Nickel Optional Finish: Black

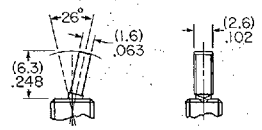
A .394" Bat



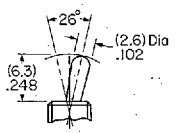
E .394" Flatted



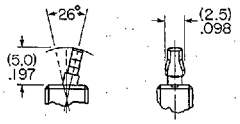
H .248" Flatted



J .248" Bat



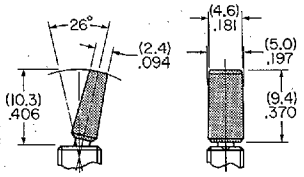
K Snap Top for Paddles



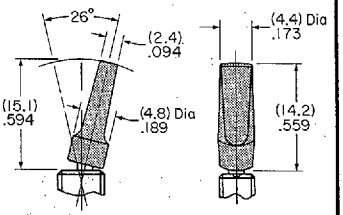
Note: Rocker actuators are shown in the rocker section.

PADDLES & OPTIONAL CAPS

A AT467 Short Paddle

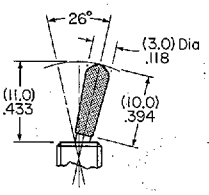


B AT468 Long Paddle

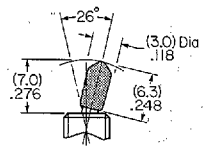


Paddle Material: Nylon
Colors Available: **A** Black **B** White **C** Red **E** Yellow **F** Green **G** Blue **H** Gray

G AT4003 .394" Bat Lever Cap



J AT4064 .248" Bat Lever Cap



Lever Cap Material: Polyvinyl chloride
Colors Available: **A** Black **B** White **C** Red

Optional Snap-in Panel Mounts Available:

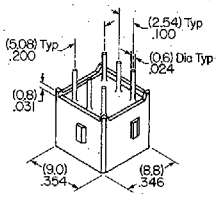
AT530 for Single Pole
AT531 for Single or Double Pole
See Accessories section in the Supplement at the end of this catalog.

NKK® SERIES A TOGGLE SWITCHES

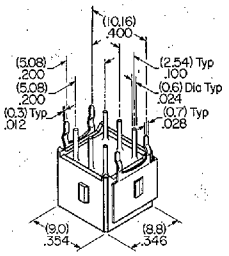
SUPER-SUBMINIATURE/PCB MOUNTING/WASHABLE

STANDARD LENGTH PC TERMINALS

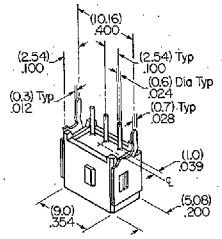
P
Straight



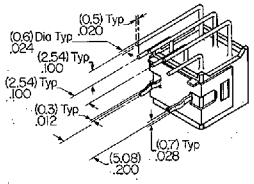
B
Straight with Bracket



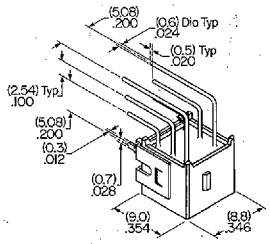
B1
Straight with Inline Bracket (SP only)



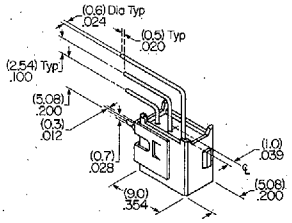
H
Right Angle with Bracket



V
Vertical with Bracket

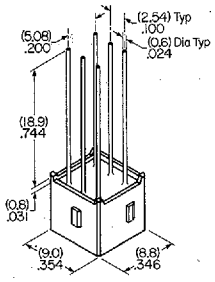


V1
Vertical with Inline Bracket (SP only)

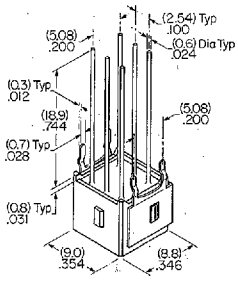


LONG LENGTH PC TERMINALS

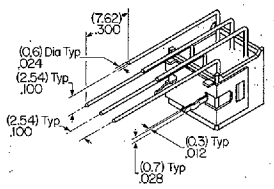
W
Straight



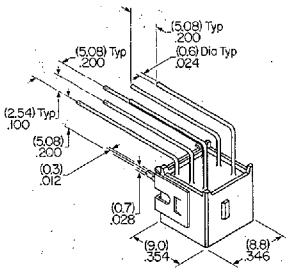
D
Straight with Bracket



R
Right Angle with Bracket



T
Vertical with Bracket



PCB MOUNTING

The use of a support bracket or placement of the square bushing in a panel cutout is recommended to increase PCB mounting stability.

Alcohol cleaning solvents are recommended.

SOLDERING SPECIFICATIONS

Recommended Time and Temperature Limits:

3 seconds at 350°C or

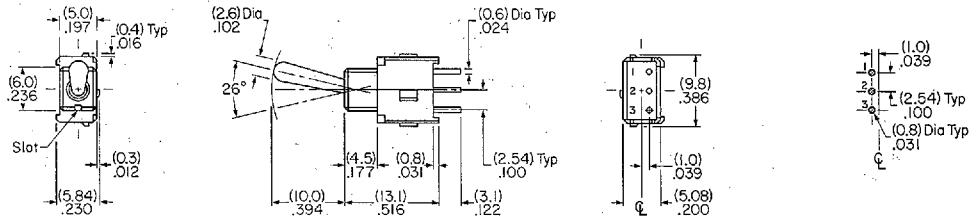
5 seconds at 270°C.

NKK® switches • 7850 E. Gelding Dr. • Scottsdale, AZ 85260 • Phone (602) 991-0942 • Fax (602) 998-1435

NKK® SERIES A TOGGLE SWITCHES

SUPER-SUBMINIATURE/PCB MOUNTING/WASHABLE

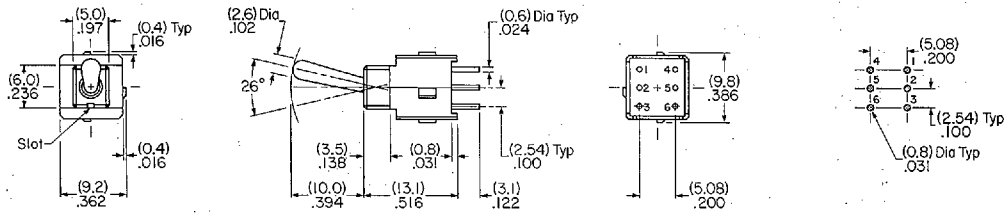
P Straight Terminals without Bracket/Single Pole



A12AP Model Shown

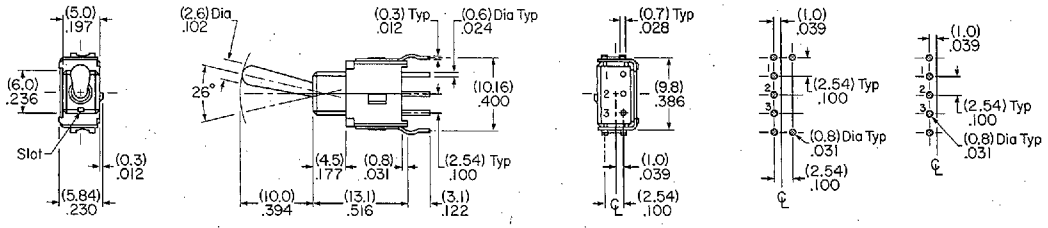
A11 models do not have terminal 2.

P Straight Terminals without Bracket/Double Pole



A22AP Model Shown

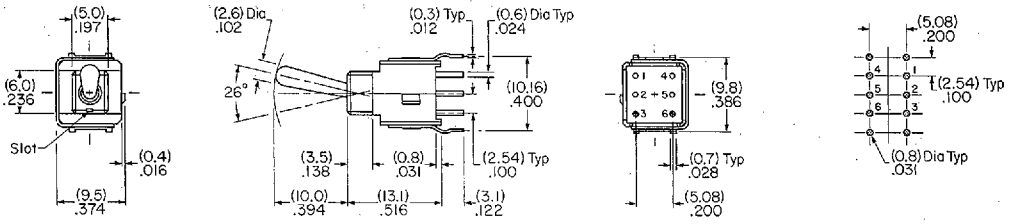
B B1 Straight Terminals with Bracket/Single Pole



A12AB Model Shown

B Terminals B1 Terminals

B Straight Terminals with Bracket/Double Pole



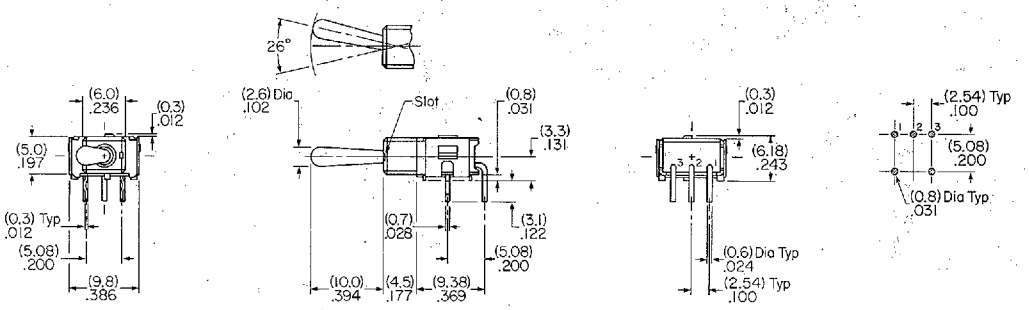
A22AB Model Shown

NKK® SERIES A TOGGLE SWITCHES

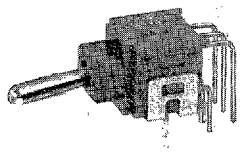
SUPER-SUBMINIATURE/PCB MOUNTING/WASHABLE

H Right Terminals with Bracket/Single Pole

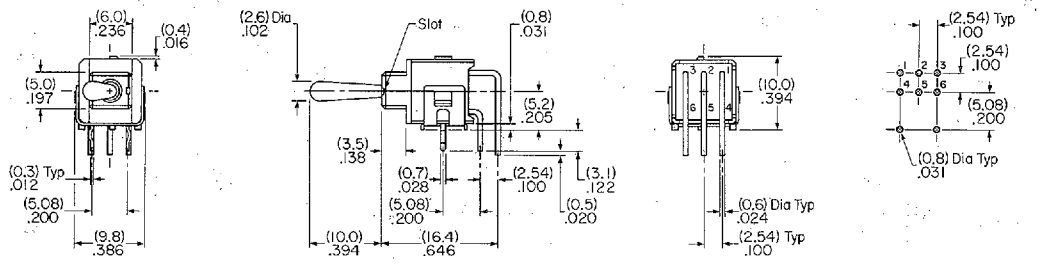
A12AH Model Shown



H Right Terminals with Bracket/Double Pole

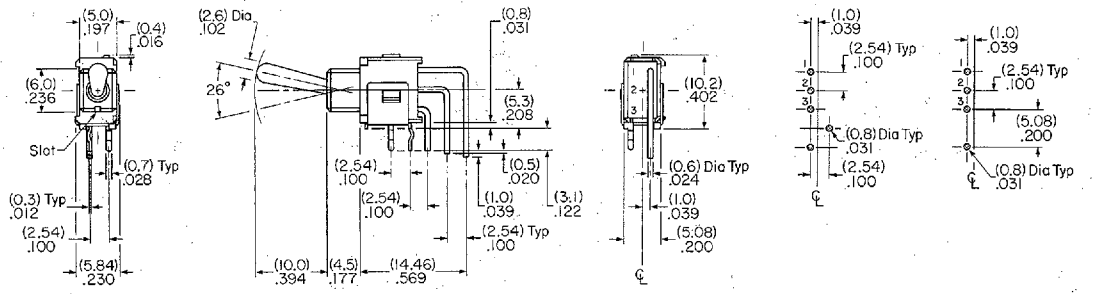


A22AH Model Shown



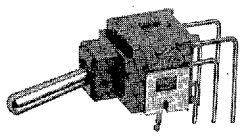
V V1 Vertical Terminals with Bracket/Single Pole

A12AV Model Shown

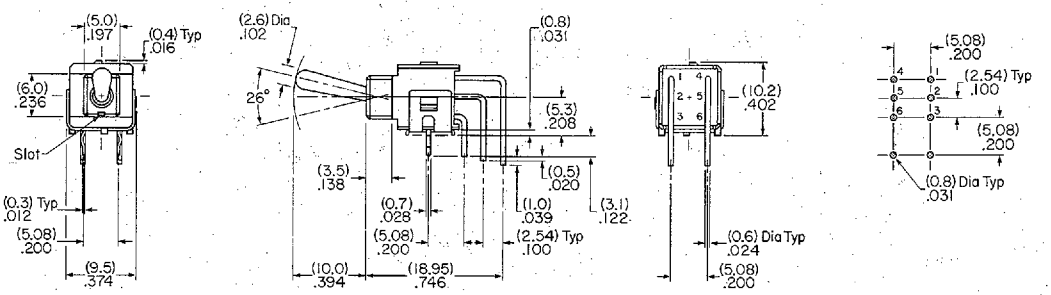


V Terminals V1 Terminals

V Vertical Terminals with Bracket/Double Pole



A22AV Model Shown



NKK® switches • 7850 E. Gelding Dr. • Scottsdale, AZ 85260 • Phone (602) 991-0942 • Fax (602) 998-1435

NKK® SERIES A

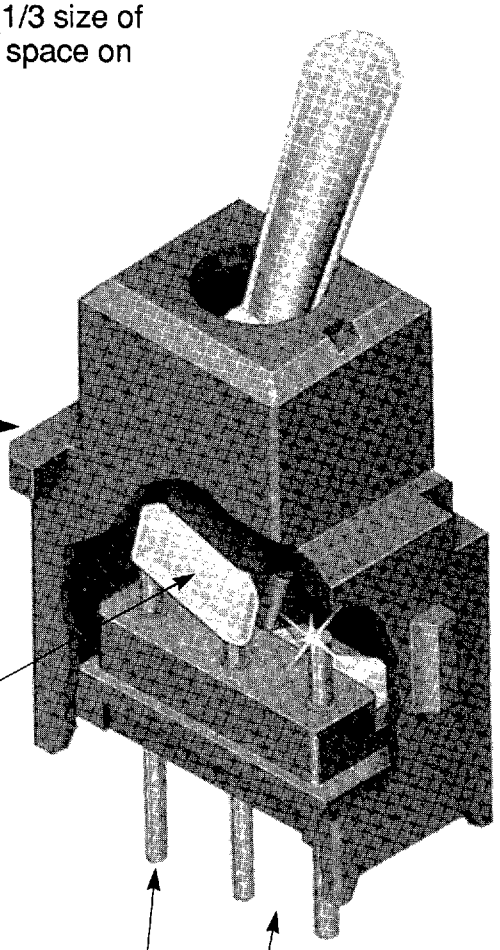
SUPER-SUBMINIATURE/PCB MOUNTING/WASHABLE

A-25-13

DISTINCTIVE FEATURES

World's first to be approved by International Electrotechnical Commission's Quality Assessment System

Super-subminiature size (1/3 size of Series M switches) saves space on PC boards.



Totally sealed body prevents contact contamination, allows time- and money-saving automated wave soldering and washing.

Patented Sliding Twin Crossbar (STC) mechanism provides unequalled logic-level reliability and smoother, positive detent actuation.

Molded-in, epoxy sealed terminals lock out flux, solvents, and other contaminants.

Actual Size

.100" x .100" terminal spacing conforms to standard PC board grid spacing.

NKK® switches • 7850 E. Gelding Dr. • Scottsdale, AZ 85260 • Phone (602) 991-0942 • Fax (602) 998-1435

NKK® SERIES A SWITCHES

SUPER-SUBMINIATURE/PCB MOUNTING/WASHABLE

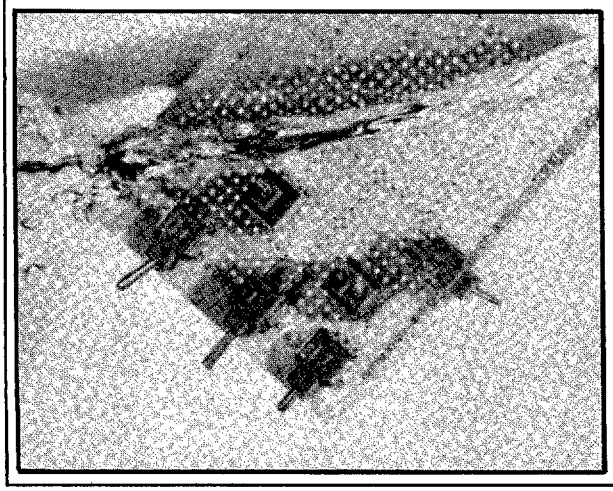
GENERAL SPECIFICATIONS

Electrical Capacity: (Resistive Load)	0.4VA maximum @ 28V AC/DC maximum (Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)
Contact Resistance:	50 milliohms maximum
Insulation Resistance:	500 megohms minimum @ 500V DC
Dielectric Strength:	500V AC minimum
Mechanical Life:	Toggles & Rockers: 100,000 operations minimum for ON-NONE-ON & ON-OFF-ON 50,000 operations minimum for other circuits Pushbuttons: 50,000 operations minimum
Electrical Life:	50,000 operations minimum
Ambient Temp Range:	-10°C through +85°C (+14°F through +185°F) Optional low temperature lubricant available
Toggle Angle of Throw:	26°
Rocker Angle of Throw:	26°
Pushbutton Travel:	Pretravel 0.7mm (.028") Overtravel 0.4mm (.016") Total 1.1mm (.043")
Nominal Operating Force:	Toggles A & E & K w/Long Paddle: 150g (momentary); 120g (maintained) Toggles J & H & K w/Short Paddle: 278g (momentary); 188g (maintained) Rockers w/Actuators K & K1: 253g (momentary); 206g (maintained) Pushbuttons: 260g

MATERIALS & FINISHES

Toggle/Rocker Actuator	Nickel plated brass
Pushbutton Plunger	Polyacetal
Case Housing	Glass fiber reinforced polyamide
Support Bracket	Tin plated phosphor bronze
Movable Contact	Phosphor bronze with gold plating over silver plating
Stationary Contacts	Brass with gold plating over nickel undercoating

SEALED FOR WASHABILITY



Sealed body construction permits Series A switches to be subjected to time- and money-saving automated soldering techniques. As a result, they can be safely cleaned of flux without fear of compromising operating characteristics.

STC CONTACT MECHANISM

NKK's patented, award-winning STC contact mechanism offers benefits unavailable in conventional mechanisms. For example, movable twin contact surfaces pinch the stationary contacts to provide increased contact stability and unparalleled logic-level reliability.

Continued reliability is assured since the gold-plated contacts are wiped clean with each actuation. Furthermore, if one side of the twin contacts should fail to conduct, the other side functions as a backup, or fail-safe path for the current. The combination of rounded movable and stationary contacts provides smooth contact feel previously unavailable in sliding contact type mechanisms.