

NKK® SERIES MLW

MINIATURE/SNAP-IN MOUNTED/POWER RATED

A-25-15

DISTINCTIVE FEATURES

Industry's first miniature snap-in, lighted rocker switch. Patented internationally.

Actuators in various styles operate with firm, well-defined movements.

Interlocking actuator prevents switch failure due to jamming or window locking.

Two bezel sizes adapt to varied panel cutouts.

Unique stainless steel retaining clips securely hold switches over a range of panel thicknesses even when exposed to vibration.

Space conserving front panel mounting with minimum behind panel dimension of .902".

Durable stainless steel housing prevents corrosion.

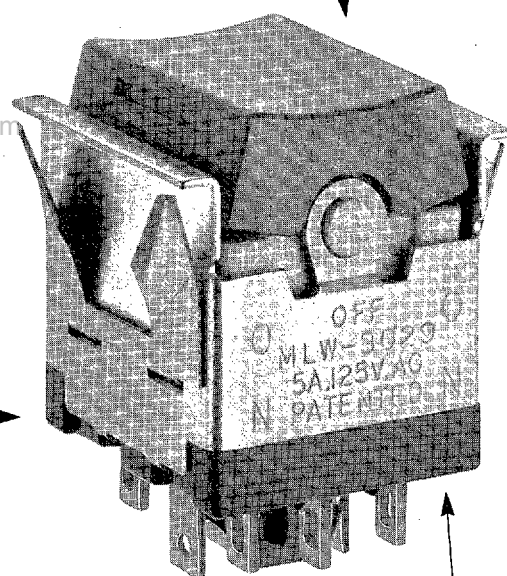
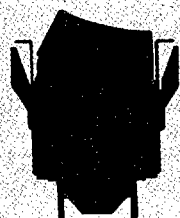
Isolated lamp circuit for incandescent, LED and neon lamps. Front panel relamping.

Built-in protective cover shields contacts from dust.

Extended lamp terminal for ease of wiring.

Epoxy sealed solder lug terminals lock out flux, dust and other contaminants.

Actual Size



Rockers

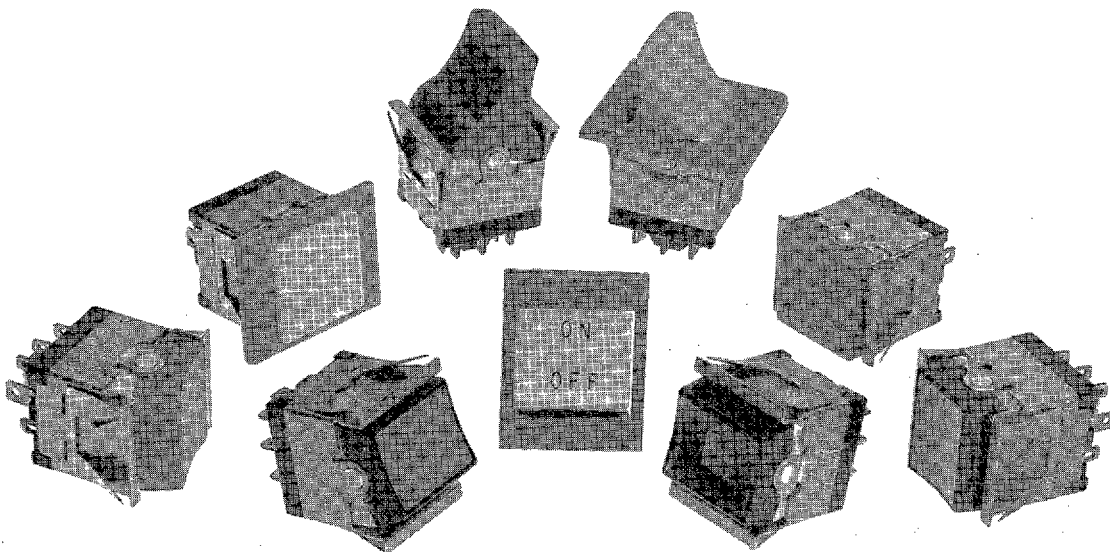
DataSheet

Illuminated

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nhk[®]**SERIES MLW****MINIATURE/SNAP-IN MOUNTED/POWER RATED**

Rockers

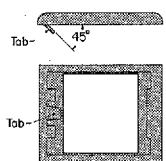
APPLICATION DATA

Patented MLW switches are available in single or double pole in a full range of circuits and are suitable for a variety of industrial applications. Illuminated rockers and paddles are available in eight colors. A companion indicator in eight matching colors is included in this series. Design rockers have transparent colored lenses with incandescent lamps. A spot illuminated rocker allows red or green LED illumination. Accessories include two sizes of decorative bezels which accommodate two different panel openings. Applications for MLW devices include: testing and processing instruments, semiconductor processing equipment, computer peripherals and aviation instrumentation.

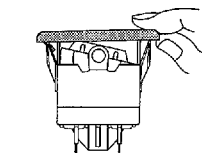
Illuminated

BEZEL ASSEMBLY**To attach bezel:**

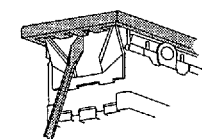
1. Pry out tab on bezel to a 45° angle.



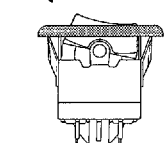
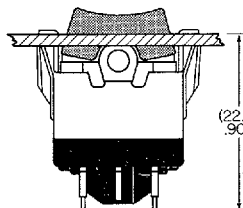
2. Insert switch frame under tab and snap on bezel.



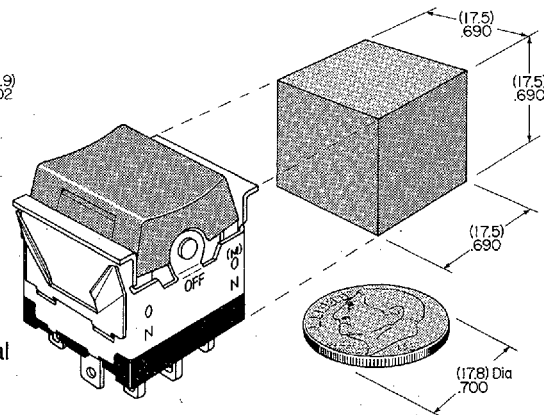
3. Push tab back into place.



4. Snap cap onto switch.

**COMPACT PANEL MOUNTING**

MLW series switches are designed for conservative use of space, front panel mounting and minimal behind panel dimensions. The switch snaps into a panel opening of .657" x .736" or adapts to a .755" square opening with the use of the optional large bezel. Double retaining clips hold the switch securely over a .039" to .157" range of panel thicknesses. This patented design helps prevent loosening of the switch from the panel even under conditions of vibration.



MINIATURE/SNAP-IN MOUNTED/POWER RATED

GENERAL SPECIFICATIONS

Electrical Capacity: (Resistive Load)	5A @ 125V AC
Contact Resistance:	10 milliohms maximum
Insulation Resistance:	200 megohms minimum @ 500V DC
Dielectric Strength:	1,000V AC minimum between contacts 1,500V AC minimum between contacts and case
Mechanical Life:	30,000 operations minimum
Electrical Life:	10,000 operations minimum
Ambient Temp Range:	Illuminated: -10°C through +50°C (+14°F through +122°F) Nonilluminated: -10°C through +70°C (+14°F through +158°F)
Nominal Operating Force:	Rockers: 1014 grams Paddles: 460 grams
Angle of Throw:	26°

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MATERIALS AND FINISHES

Housing	Stainless steel
Movable Contacts	Silver alloy
Stationary Contacts	Silver
Base	Phenolic resin
Common Terminal	Copper with silver plating
End Terminals	Copper with silver plating
Lamp Terminals	Phosphor bronze with nickel plating

UL & CSA

Double pole models rated 5A @ 125V AC are recognized by Underwriters Laboratories Inc. UL File No. E44145
Canadian Standards Association certifies the double pole models rated 5A @ 125V AC and 3A @ 250V AC. CSA File Nos. LR23535 & LR56017

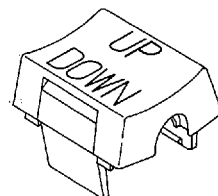
INSCRIPTIONS

Inscriptions can be placed on the design cap lens, rocker cap, indicator cap or bezel. Up to three lines may be inscribed on caps. Details regarding hot stamping or engraving can be obtained from the factory.

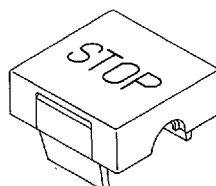
Design Cap



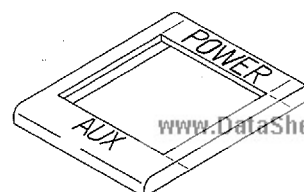
Rocker Cap



Indicator Cap



Bezel



NKK[®] SERIES MLW ROCKER SWITCHES

MINIATURE/SNAP-IN MOUNTED/POWER RATED

TYPICAL SWITCH ORDERING EXAMPLE

MLW30
2
5
—
F
8

POLES

1	SPDT
2	SP3T DPDT

CIRCUITS

	2	3	5	8	9	0
ON	ON	ON	ON	ON	ON	ON
NONE	NONE	OFF	NONE	OFF	OFF	ON
ON	ON	ON	(ON)	(ON)	(ON)	ON
() = Momentary						

LAMPS

Incandescent Lamps used with Solid or Design Caps

O	No lamp
E	6 Volt
F	12 Volt
H	18 Volt
K	24 Volt
L	28 Volt

Neon Lamp used with Solid or Design Caps

N	110 Volt
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LED

used with Spot Illuminated Cap

D	Single Element
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CAP TYPES

Solid Caps

1	Rocker
5	Paddle

Design Cap

8	Black rocker with colored lens
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Spot Illuminated Cap

9	Black rocker with clear window
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AND ASSEMBLY ORDERING EXAMPLE

C

—

1

A

CAP OR LED COLORS

Solid Cap Colors

A	Black
B	White
C	Red
D	Orange
E	Yellow
F	Green
G	Blue

Design Cap Lens Colors

B	White
C	Red
D	Orange
F	Green
G	Blue

Spot Illuminated Cap LED Colors

C	Red illumination
F	Green illumination

BEZELS

1	.787" Wide
2	.937" Wide

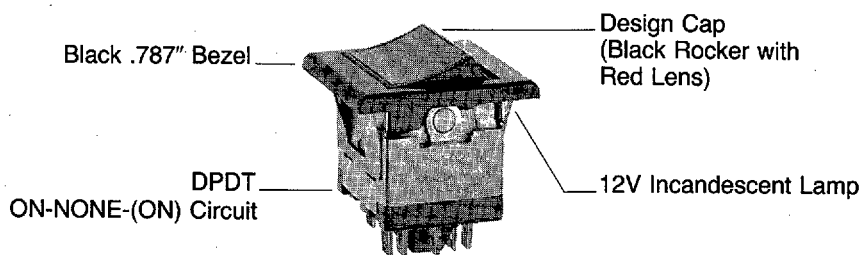
BEZEL COLORS

A	Black
B	White
C	Red
D	Orange
E	Yellow
F	Green
G	Blue
H	Gray

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DESCRIPTION FOR TYPICAL ORDERING EXAMPLE (MLW3025-F8C-1A):

SERIES MLW ROCKER






IMPORTANT: Switches are supplied without UL & CSA marking unless specified. See Supplement for instructions.

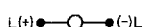
NKK® SERIES MLW ROCKER SWITCHES

MINIATURE/SNAP-IN MOUNTED/POWER RATED

POLES AND CIRCUITS

POLE & THROW	MODEL	ACTUATOR POSITION & TERMINAL NUMBERS		
		() = Momentary		
		Up 	Center 	Down 
SPDT	MLW3012	ON	NONE	ON
	MLW3013	ON	OFF	ON
	MLW3015	ON	NONE	(ON)
	MLW3018	(ON)	OFF	(ON)
	MLW3019	ON	OFF	(ON)
CONNECTED TERMINALS		2-3	OPEN	2-1

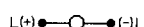
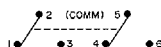
SCHEMATIC



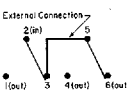
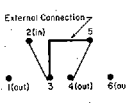
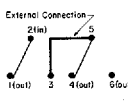
Note: Lamp circuit is isolated & requires an external switch.

DPDT	MLW3022	ON	NONE	ON
	MLW3023	ON	OFF	ON
	MLW3025	ON	NONE	(ON)
	MLW3028	(ON)	OFF	(ON)
	MLW3029	ON	OFF	(ON)
CONNECTED TERMINALS		2-3 5-6	OPEN	2-1 5-4

SCHEMATIC



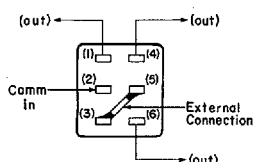
Note: Lamp circuit is isolated & requires an external switch.

SP3T	MLW3020	ON	ON	ON
With Extra Connection		2-6	2-4	2-1
W/O Extra Connection		2-3 5-6	2-3 5-4	2-1 5-4
SCHEMATIC				
Terminal numbers not actually on switch.				

THREE-ON POSITION

In the manufacture of MLW 3020, a double pole 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.



LAMPS

AT602 Incandescent

- E** 6 Volt
- F** 12 Volt
- H** 18 Volt
- K** 24 Volt
- L** 28 Volt



Used with Solid and Design Caps

T-1 1/2 Pilot Slide Base

When ordering separately, identify voltage after AT number. For example: AT602-6V.

ELECTRICAL SPECIFICATIONS

Voltage V	6V	12V	18V	24V	28V
Current I	80mA	50mA	35mA	25mA	22mA
Endurance	2,000 Hours				

AT602N Neon

- N** 110 Volt



Used with Solid and Design Caps

Neon recommended with red caps only.

T-1 1/2 Pilot Slide Base

ELECTRICAL SPECIFICATIONS

Voltage V	110V	Recommended Resistor: 33K ohms for 110V AC 100K ohms for 220V AC
Current I	1.5mA	
Endurance	25,000 Hours	

AT606 LED

- D** Single Element



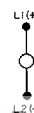
Used with Spot Illuminated Caps

T-1 1/2 Pilot Slide Base

ELECTRICAL SPECIFICATIONS

		Red	Green
Forward Peak Current	I_{FM}	25mA	30mA
Continuous Forward Current	I_F	20mA	25mA
Forward Voltage	V_F	2.8V	2.8V
Reverse Peak Voltage	V_{RM}	4V	4V
Current Reduction Rate Above 25°C	ΔI_F	0.33mA/°C	0.40mA/°C

Electrical specifications are determined at a basic temperature of 25°C. Lamp circuit is independent of switch operation. Dimension drawings of lamps are in the accessories section at the end of this catalog. If the source voltage exceeds the lamp's rated voltage, a ballast resistor is required. The resistor value can be calculated by using the formula at the end of the catalog.



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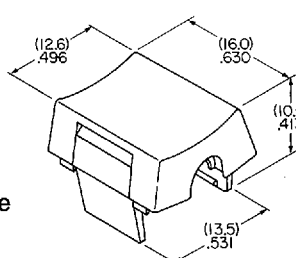
NKK® SERIES MLW ROCKER SWITCHES

MINIATURE/SNAP-IN MOUNTED/POWER RATED

CAP TYPES AND COLORS

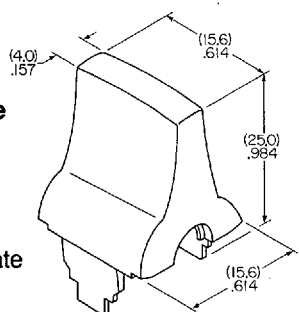
1 AT405 Rocker

Translucent Polycarbonate



5 AT426 Paddle

Translucent Polycarbonate



Rocker/Paddle Colors:

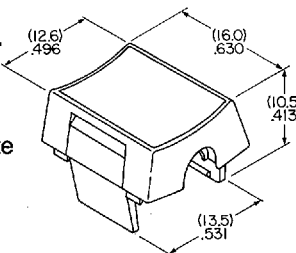
- A** Black
- B** White
- C** Red
- D** Orange
- E** Yellow
- F** Green
- G** Blue

Used with AT602 Incandescent or AT602N Neon Lamps

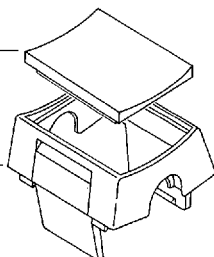
Design Cap

8 AT438 Rocker

Polycarbonate



Translucent Colored Lens



Opaque Black Rocker

Lens Colors:

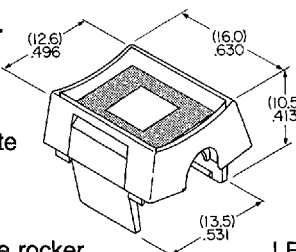
- B** White
- C** Red
- D** Orange
- F** Green
- G** Blue

Used with AT602 Incandescent or AT602N Neon Lamps

Spot Illuminated Cap

9 AT462 Rocker

Polycarbonate



Black opaque rocker with clear window.

LED Colors:

- C** Red
- F** Green

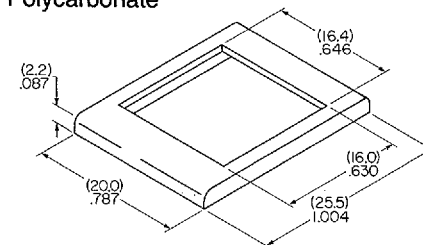
LED AT606 provides illumination color.

Standard finish is glossy. For matte finish, contact factory.

OPTIONAL BEZELS

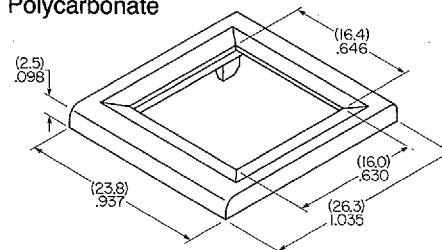
1 AT204 .787" Wide Bezel (Standard)

Polycarbonate



2 AT9201 .937" Wide Bezel (Large)

Polycarbonate



Bezel Colors:

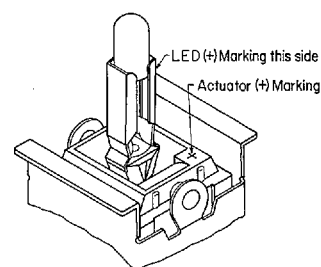
- A** Black
- B** White
- C** Red
- D** Orange
- E** Yellow
- F** Green
- G** Blue
- H** Gray

Standard finish is glossy. For matte finish, contact factory.

FRONT PANEL RELAMPING

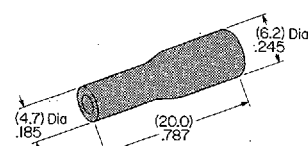
Lamps and LEDs can be changed without removing the switch from the panel. The lamp extractor (AT107) assists in removing and inserting lamps and LEDs.

Note: When changing LEDs, match the positive polarity markings on both lamp base and actuator block.



LAMPING TOOL

AT107 Lamp Extractor

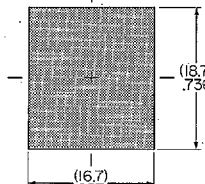
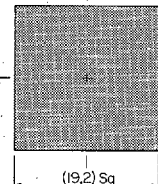


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NKK® SERIES MLW ROCKER SWITCHES

MINIATURE/SNAP-IN MOUNTED/POWER RATED

EFFECTIVE PANEL THICKNESSES AND PANEL CUTOUTS

	Without Bezel	With Standard Bezel AT204	With Large Bezel AT9201
Panel Thickness:	1.0 ~ 4.0mm (.039 ~ .157")	1.0 ~ 3.0mm (.039 ~ .118")	1.0 ~ 3.0mm (.039 ~ .118")
Panel Cutout:			

SOLDERING & WIRING

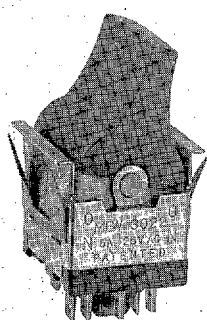
Soldering:

3 seconds at 350°C
5 seconds at 270°C

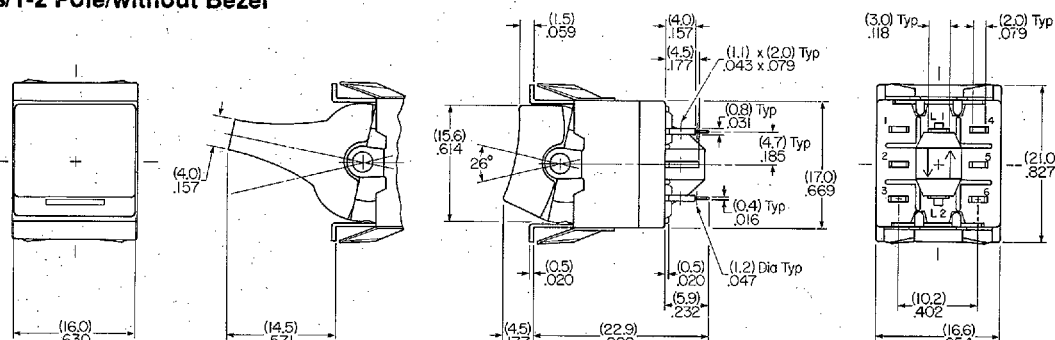
Wiring:

.043" X .079" oblong holes accommodate one solid 18-gauge wire or two solid or stranded 22-gauge wires. Lamp terminals have .047" diameter holes which accommodate one solid 18-gauge wire.

Solder Lug Terminals/1-2 Pole/without Bezel



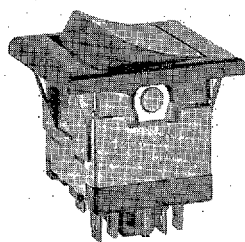
MLW3022-F5C Model Shown



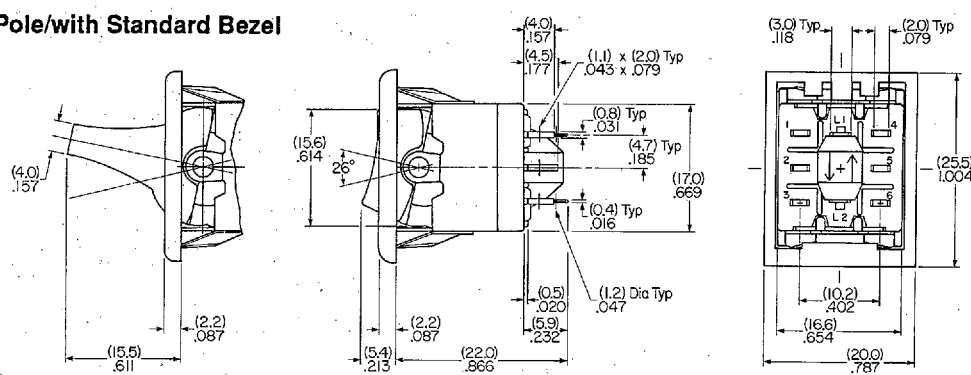
Actuator in UP position.

Terminals 4, 5 & 6 are not on single pole models.

Solder Lug Terminals/1-2 Pole/with Standard Bezel



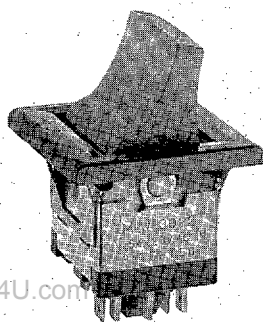
MLW3022-F1C-1A Model Shown



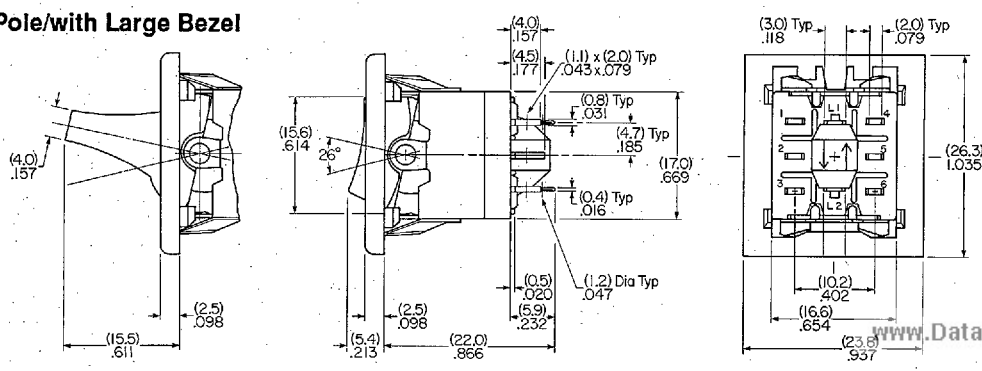
Actuator in UP position.

Terminals 4, 5 & 6 are not on single pole models.

Solder Lug Terminals/1-2 Pole/with Large Bezel



MLW3022-F5C-2A Model Shown



Actuator in UP position.

Terminals 4, 5 & 6 are not on single pole models.