



# ITW SWITCHES SNAP ACTION SWITCHES

Design, development and manufacture of switch solutions

 PUSH BUTTON

 SNAP ACTION

 ACTUATORS

 SLIDE

 ROTARY

 CUSTOM ASSEMBLIES

 MILITARY / AEROSPACE



**ITW Switches**  
SENSORS, SWITCHES, ELECTRONIC CONTROLS



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# LICON — SNAP ACTION SWITCHES

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## Series 11

### MINIATURE 10 AMP DOUBLE-BREAK SNAP ACTION SWITCHES

This rugged miniature switch features the Butterfly® double-break snap action switch mechanism. It is ideal for tough applications where high current capability and Butterfly® reliability are needed.



#### APPLICATIONS

- Welding guns
- Pipeline valve actuator
- Discrete length tape dispenser machines
- Lift trucks
- Electrical contractors

#### KEY FEATURES:

- Gold or silver contacts
- Variety of terminals configurations and styles available
- UL recognized and CSA certified
- Reset style switch available
- Roller lever and overtravel plunger actuator are available

ACTUAL SIZE

#### ORDERING INFORMATION:

##### Switches

Part Number	Terminals
<b>11-104</b>	End Solder
<b>11-204</b>	#4 Screw
<b>11-304</b>	Side Solder
<b>11-314 Reset</b>	Side Solder
<b>11-504</b>	Quick Disconnect .250

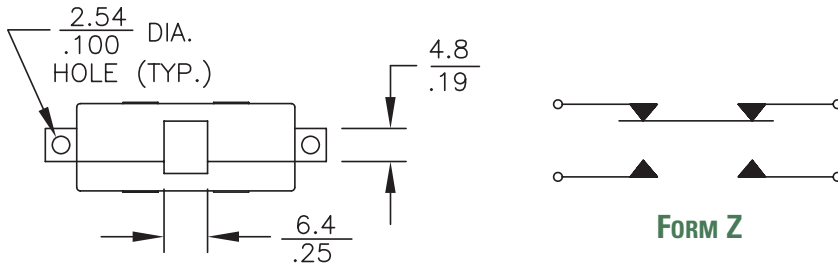
##### Actuators (see page 68 for additional specifications)

Part Number	Oper. Force	Release Force	Pretravel	Overtravel	Movement Diff.	Operating Point
<b>71-1040</b> Roller Lever	3.5 oz max	2 oz min	.093 max	.062 min	.030 ± .015	.671 ± .031
<b>71-2010</b> Over Travel	8 ± 3 oz	4 oz min	.050 max	.215 min	.020 ± .005	.828 ± .015

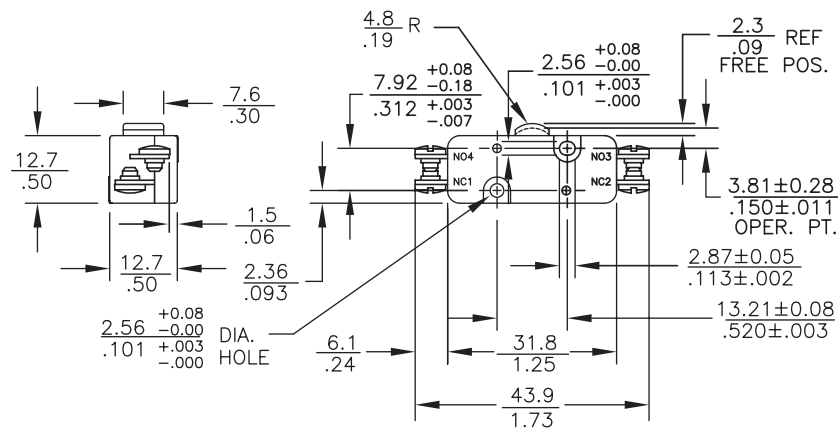
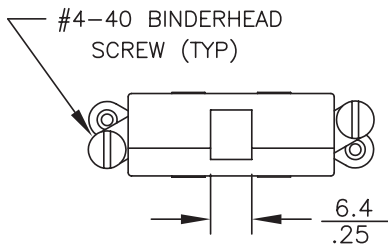
#### STANDARDS / AGENCY / RATINGS:



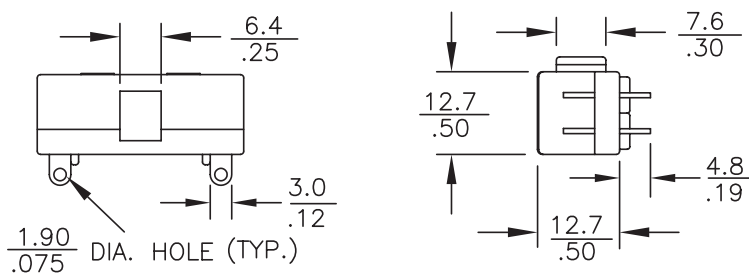
**END SOLDER**



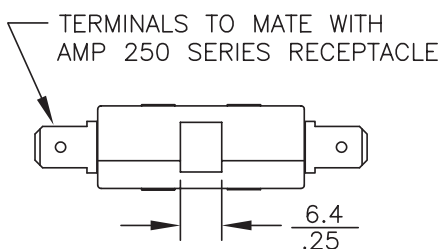
**# 4 SCREW**



**SIDE SOLDER**



**QUICK DISCONNECT**



**MECHANICAL / ELECTRICAL CHARACTERISTICS:**

- Pretravel:**  
0.050 inches max
- Overtravel:**  
0.015 inches min
- Operating Force:**  
8 oz + 3 oz
- Release Force:**  
4 oz min
- Movement Differential:**  
0.020 ± 0.007 inches
- Operating Point:**  
0.150 ± 0.011 inches  
(from mounting hold centers)
- Circuit:**  
SPDT-DB (Form Z)

**Electrical Ratings (Typical):**

Circuitry	125/250 VAC	28 VDC
SPST-DB NC (Form Y) or NO (Form X)	10 amp (75-80% PF) 1/2 HP 125 VAC	10 amp Ind 15 amp Res
SPDT-DB (Form Z)	3/4 HP 250 VAC	7 amp Ind 10 amp Res
SPDT-SB (Form C)		4 amp Ind 6 amp Res

## Series 14

### HEAVY DUTY 20 AMP DOUBLE-BREAK SWITCHES

This rugged single-pole double-break Butterfly® switch will handle up to 20 amps. Ideal for high-current applications which require long life and reliability.



### APPLICATIONS

- Train car door operators
- Bus door operators
- Pendant controls
- Lift trucks
- Heavy industrial machinery

### KEY FEATURES:

- Available in standard or heavy duty mounting
- Semirefactory contacts and offset #6 screw terminals with cup washers are standard
- Sealed button actuator is available
- Button, overtravel plunger or pivoted lever actuator are available
- UL recognized and CSA certified

### ORDERING INFORMATION:

Part Number	Mounting	Operating Force	Release Force	Pretravel	Overtravel	Movement Differential	Operating Point	Actuator Style
14-124	Standard	12 ± 3 oz	4 oz min	.074 max	.030 min	.020 ± .007	.808 ± .013	Standard Button Actuator
14-12404	Heavy Duty	12 ± 3 oz	4 oz min	.074 max	.030 min	.021 ± .007	.090 ± .053	Standard Button Actuator
14-324	Standard	12 ± 3 oz	4 oz min	.074 max	.219 min	.020 ± .007	.830 ± .036	Overtravel Panel Mount
14-724	Standard	5 ± 2 oz	2 oz min	.156 max	.060 min	.046 ± .017	1.406 ± .034	Roller Lever Actuator

### Electrical Ratings:

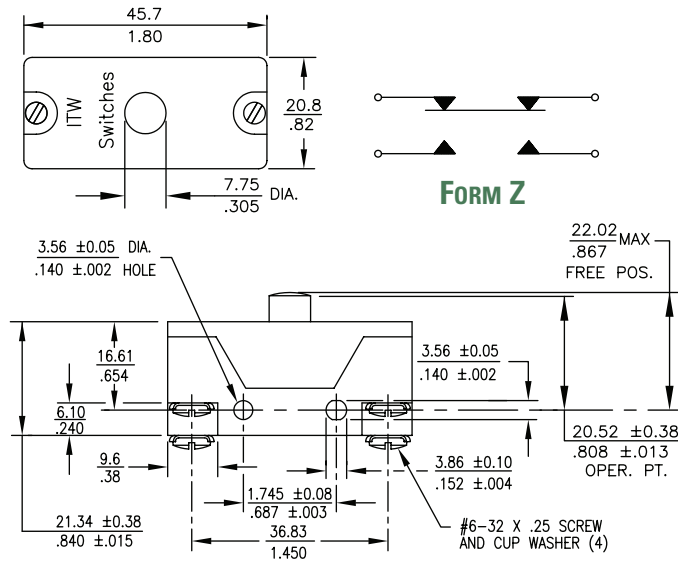
Circuitry	Volts	AC		DC	
		Steady	In-Rush	SPDT	SPST
SPDT-DB(Form Z)	28	20	80	10.0	25.0
SPDT-DB(Form Z)	125	20	80	—	—
SPDT-DB(Form Z)	250	20	80	—	—
SPDT-DB(Form Z)	480	20	50	—	—

UL recognized. Amps @ 125/250/480 VAC 78-80%PF and CSA Certified File No. 16388.  
1 HP 125 VAC, 2 HP 250 VAC. Materials recognized by UL for use at temperatures not exceeding 105° C (220° F)

### STANDARDS / AGENCY / RATINGS:



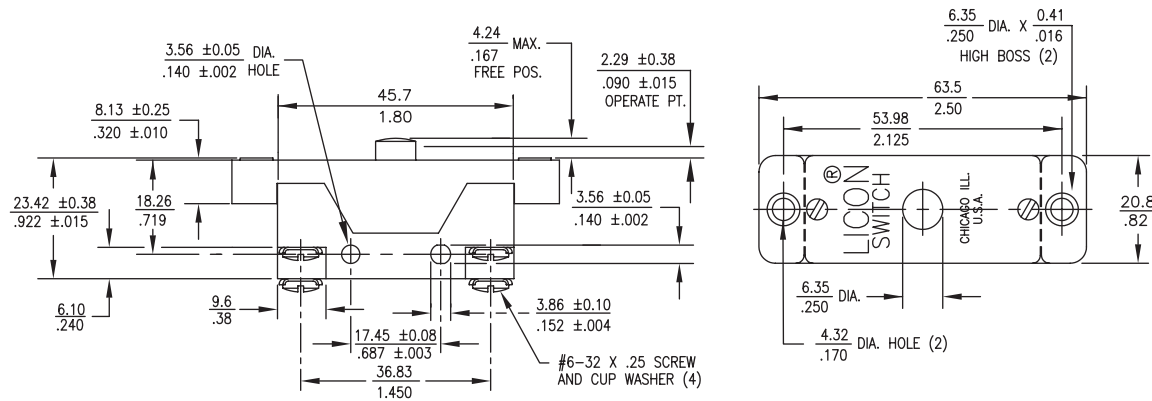
STANDARD BUTTON ACTUATOR



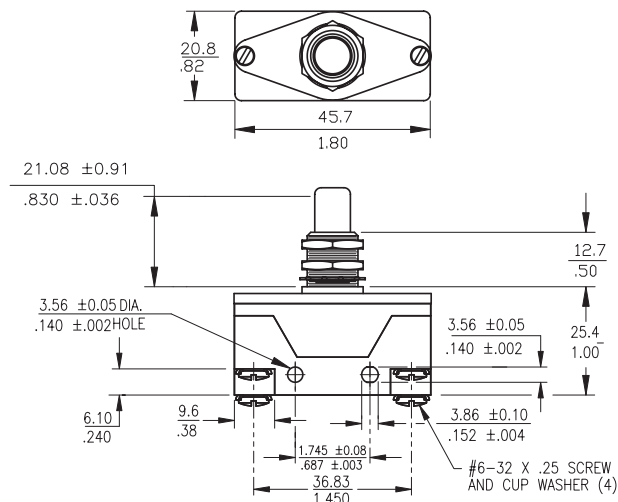
MECHANICAL / ELECTRICAL CHARACTERISTICS:

- Circuit:** SPDT-DB (Form Z)
- Terminal:** #6 screw with cup washer
- Electrical Ratings :** See chart on left

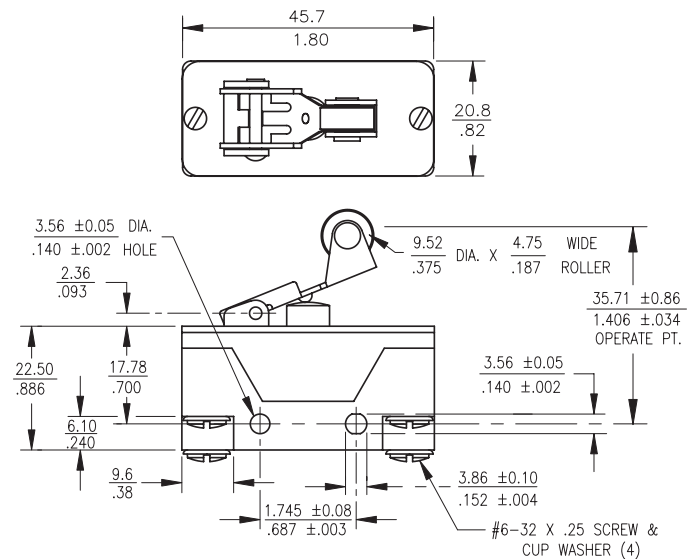
STANDARD BUTTON ACTUATOR—HEAVY DUTY MOUNTING



OVERTRAVEL PANEL MOUNT



ROLLER LEVER



## Series 16

### SUB-MINIATURE 10.1 AMP DOUBLE-BREAK SNAP ACTION SWITCHES

Series 16 switches feature the Butterfly® double-break momentary switch mechanism. This offers the capability of handling high (or low) current loads in a small switch and gives the options of controlling two circuits with the Form Z switch circuitry.

#### APPLICATIONS

- Lift truck seat switch
- Aircraft contactor or actuator
- Sump pump float switch
- Valve actuator
- Industrial equipment and machinery
- Office equipment

#### KEY FEATURES:

- Gold or silver contacts
- Meets MIL-PRF-8805/7
- UL recognized and CSA certified: 10.1 amps @ 125/250 VAC
- Variety of terminal configurations and styles
- Roller lever, lever, short roller lever and bushing mount actuator are available



ACTUAL SIZE

#### ORDERING INFORMATION:

Part Number	Circuit	Temperature Index	Contacts	Terminals	RoHS Compliant
16-104	SPDT (Form Z)	To 275°F Ambient	Silver **	End Solder	✓
16-188051	SPDT (Form Z)	To 275°F Ambient	Gold Plated	End Solder	✓
16-204	SPDT (Form Z)	To 275°F Ambient	Silver **	End Screw	—
16-304	SPDT (Form Z)	To 275°F Ambient	Silver **	Side Solder	✓
16-404	SPDT (Form Z)	To 275°F Ambient	Silver **	Bottom Solder	✓
16-40401	SPDT (Form Z)	To 275°F Ambient	Gold Plated	Bottom Solder	✓
16-4044*	SPDT (Form Z)	To 275°F Ambient	Silver **	Bottom Solder	✓
16-40441*	SPDT (Form Z)	To 275°F Ambient	Gold Plated	Bottom Solder	✓
16-488051	SPDT (Form Z)	To 275°F Ambient	Gold Plated	Bottom Solder	—
16-530004***	SPDT (Form Z)	To 275°F Ambient	Silver **	Bottom QC .110	✓

\* Thermoplastic case and cover.

\*\* For electrical loads under 250mA, consult factory.

\*\*\* Mounts easily to Series 76-95 Switches.

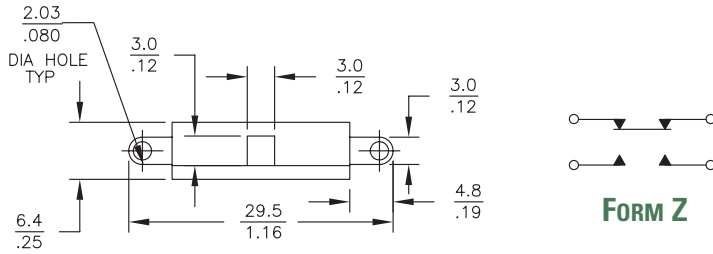
#### Actuators (see page 69 for additional specifications)

Part Number	Switch Series	Oper. Force	Release Force	Pretravel	Overtravel	Movement Diff.
76-1200 Roller Lever	16	4 oz max	1 oz min	.125 max	.025 min	.045 ± .011
76-1210 Lever	16	2.5 oz max	1 oz min	.125 max	.025 min	.047 ± .013
76-1220 Short Roller Lever	16	5 + 3 oz - 2 oz min	2 oz min	.050 max	.023 min	.020 ± .005
76-22604 Bushing Mount	16	5 oz	—	.050 max	.156 MIN	—

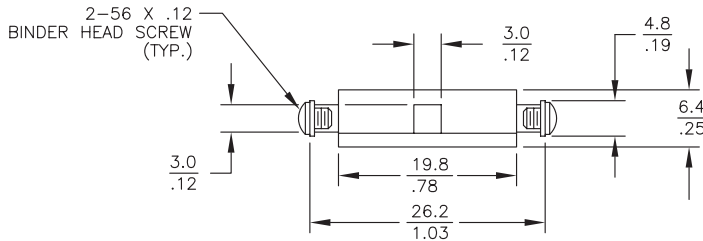
#### STANDARDS / AGENCY / RATINGS:



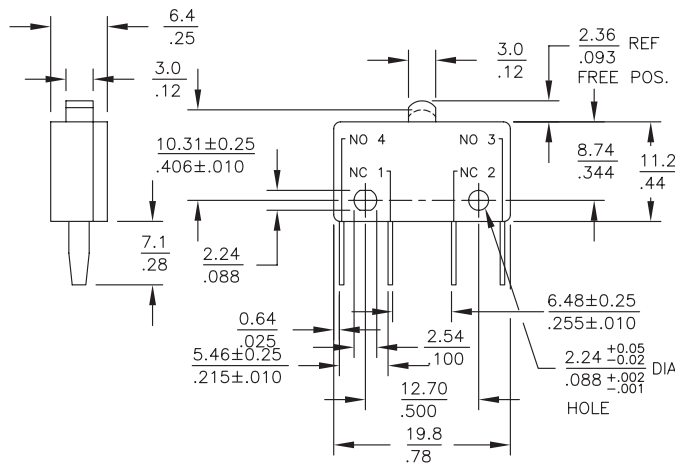
**END SOLDER**



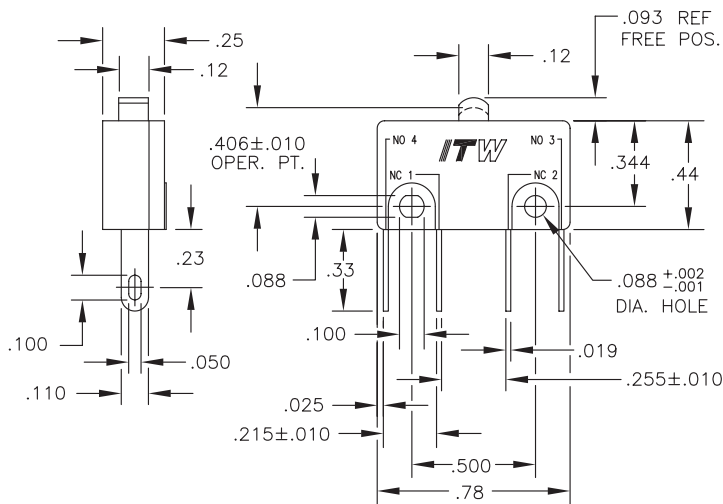
**END SCREW**



**QC TAPER TAB**



**BOTTOM QC .110**



**MECHANICAL / ELECTRICAL CHARACTERISTICS:**

**Pretravel:**  
0.050 inches max

**Overtravel:**  
0.012 inches min

**Operating Force:**  
5 oz + 3 oz - 2 oz

**Release Force:**  
2 oz min

**Movement Differential:**  
0.020 inches ± 0.005

**Operating Point:**  
0.406 inches ± 0.010  
(from mounting hold centers)

**Circuit:**  
SPDT-DB (Form Z)

**Temperature Index:**  
-54°C to +135°C  
(-65°F to +275°F)

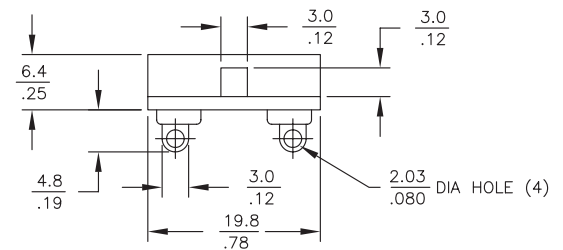
**MIL-PRF-8805/7 QPL listed:**  
16-188051 MS25476-1  
16-488051 MS27217-1

**Electrical Rating @ 28VDC:**

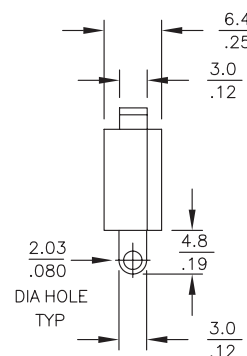
		Sea Level	70,000 Feet
Form Z 2 Circuit	Res	10A	10A
	Ind*	5A	2A
	Lamp	3A	—

\*L/R = .026

**SIDE SOLDER**



**BOTTOM SOLDER**





## Series KAP 16

### SUB-MINIATURE 10.1 AMP DOUBLE-BREAK SNAP ACTION SWITCHES

Similar to Series 16 switches with improved materials and performance. Ideal for critical applications where long life and reliability are needed.

#### APPLICATIONS

- Lift truck seat switch
- Aircraft contactor
- Sump pump float switch
- Aircraft actuator
- Valve actuator
- Industrial equipment and machinery
- Office equipment
- Medical equipment

#### KEY FEATURES:

- Enhanced gold contacts for high or low power applications
- Thermoplastic case sealed to prevent flux intrusion
- Meets MIL-PRF-8805 requirements
- Roller lever, lever, short roller lever and bushing mount actuator are available.



ACTUAL SIZE

#### ORDERING INFORMATION:

##### Switches

Part Number	Contacts	Terminals
<b>16-110</b>	Enhanced Gold	End
<b>16-111</b>	Silver	End
<b>16-410</b>	Enhanced Gold	Bottom

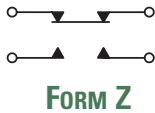
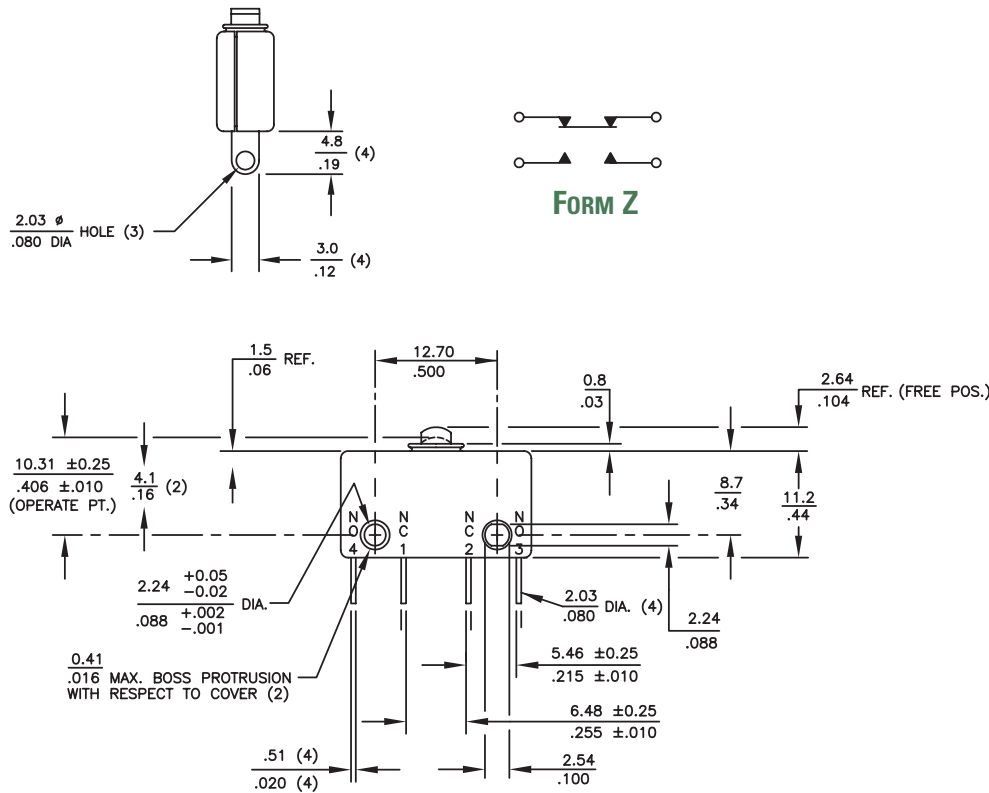
##### Actuator (see page 69 for additional specifications)

Part Number	Switch Series	Oper. Force	Release Force	Pretravel	Overtravel	Movement Diff.
<b>76-1200</b> Roller Lever	16	4 oz max	1 oz min	.125 max	.025 min	.045 ± .011
<b>76-1210</b> Lever	16	2.5 oz max	1 oz min	.125 max	.025 min	.047 ± .013
<b>76-1220</b> Short Roller Lever	16	5 + 3 oz - 2 oz min	2 oz min	.050 max	.023 min	.020 ± .005
<b>76-22604</b> Bushing Mount	16	5 oz	—	.050 max	.156 min	—

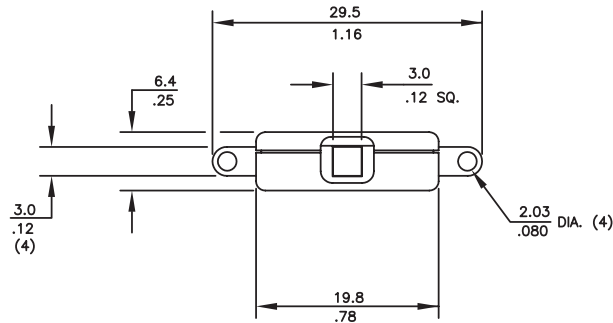
#### STANDARDS / AGENCY / RATINGS:



**BOTTOM SOLDER**



**END SOLDER**



**MECHANICAL / ELECTRICAL CHARACTERISTICS:**

- Pretravel:**  
0.050 inches max
- Overtravel:**  
0.012 inches min
- Operating Force:**  
5 oz + 3 oz - 2 oz
- Release Force:**  
2 oz min
- Movement Differential:**  
0.020 inches ± 0.005
- Operating Point:**  
0.406 inches ± 0.010  
(from mounting hole centers)
- Circuit:**  
SPDT-DB (Form Z)
- Temperature Index:**  
-65°C to +125°C  
(-85°F to +257°F)

**Electrical Rating @ 28VDC:**

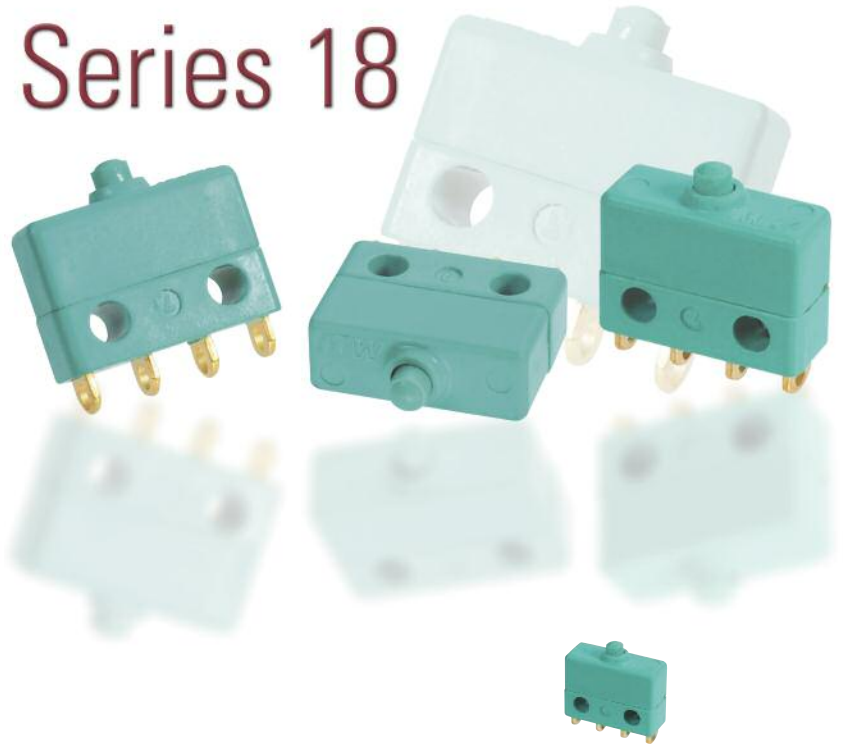
		Sea Level	70,000 Feet
Form Z 2 Circuit	Res	10A	10A
	Ind*	5A	2A
	Lamp	3A	—

\*L/R = .026

## Series 18

### ULTRA SUB-MINIATURE 7 AMP DOUBLE-BREAK SNAP ACTION SWITCHES

Series 18 switches feature the Butterfly® double-break momentary switch mechanism. This very small package can carry a full 7 amp load (or low current load).



ACTUAL SIZE

### APPLICATIONS

- Industrial valve controls
- Aircraft rotary actuator
- Aircraft linear actuator
- Float control pumps
- Spool valves
- Medical equipment
- Aircraft fuel valves
- Pressure switches

### KEY FEATURES:

- Gold contacts
- Solder terminals
- Meets MIL-S-8805/76
- UL recognized and CSA certified: 7 amps @ 125/250 VAC
- Lever and roller actuator are available

### ORDERING INFORMATION:

#### Switches

Part Number	Contacts	Terminals	RoHS Compliant
<b>18-40421</b>	Gold Plated	End Solder	✓
<b>18-488051</b> (MS27257-1)	Gold Plated	End Solder	✓

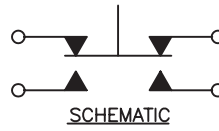
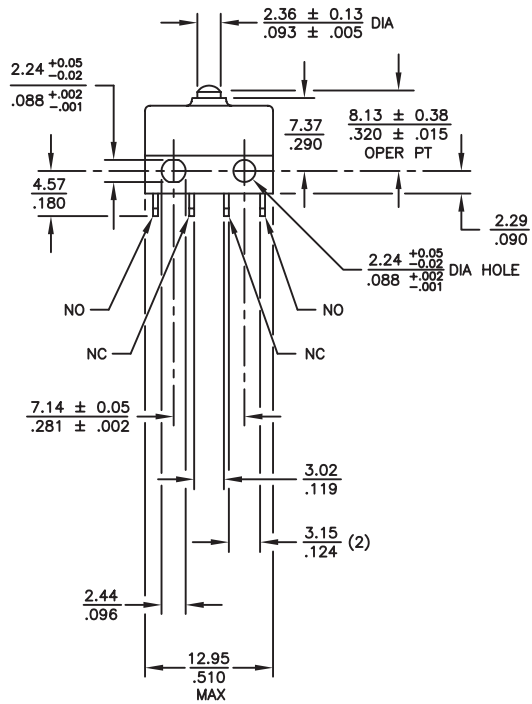
#### Actuator (see page 70 for additional specifications)

Part Number	Oper. Force	Release Force	Pretravel	Overtravel	Movement Diff.	Operating Point
<b>78-3000</b> Spring Lever	6 ± 2 oz	2 oz min	.125 max	.030 min	.030 ± .015	.325 ± .030
<b>78-3100</b> Roller Lever	6 ± 2 oz	2 oz min	.125 max	.030 min	.035 ± .015	.560±.030

### STANDARDS / AGENCY / RATINGS:



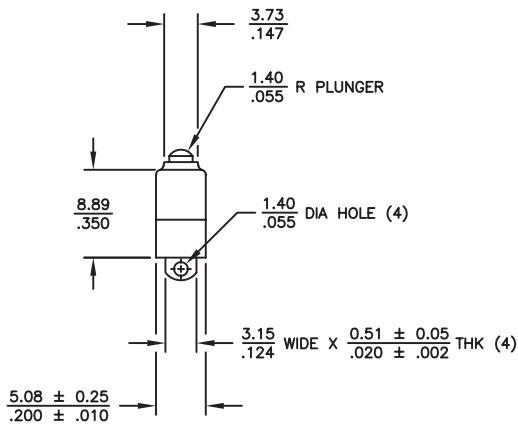
PRODUCT DRAWINGS



MECHANICAL / ELECTRICAL CHARACTERISTICS:

- Pretravel:**  
0.030 inches max
- Overtravel:**  
0.006 inches min
- Operating Force:**  
5 oz + 3 oz - 2 oz
- Release Force:**  
1.5 oz min
- Movement Differential:**  
0.015 inches ± 0.005
- Operating Point:**  
0.320 inches ± 0.015  
(from mounting hole centers)
- Circuit:**  
SPDT-DB (Form Z)
- MIL-PRF-8805/77 QPL listed:**  
18-488051 MS27257-1
- Electrical Rating @ 28VDC:**

Circuitry	Current
2 Circuit (SPDT-DB)	5 amp Res 3 amp Ind*
1 Circuit (SPST)	8 amp Res 7 amp Ind*
*L/R = .026	



## Series 19

### 5-AMP SUB-MINIATURE SWITCHES

This fully sealed snap action switch series is ideal for applications in harsh environments where ingress of water and dust must be prevented.



### APPLICATIONS

- Industrial equipment
- Battery chargers for cordless tools
- Medical equipment
- Welding guns

### KEY FEATURES:

- Insert molded terminals—fully sealed base
- Meets IP67
- BEAB and ENEC approvals
- SPDT (Form C) circuitry
- Choice of actuator
- Silver or gold contacts
- Non-flammable switch UL94-V0 rated materials

ACTUAL SIZE

### ORDERING INFORMATION:

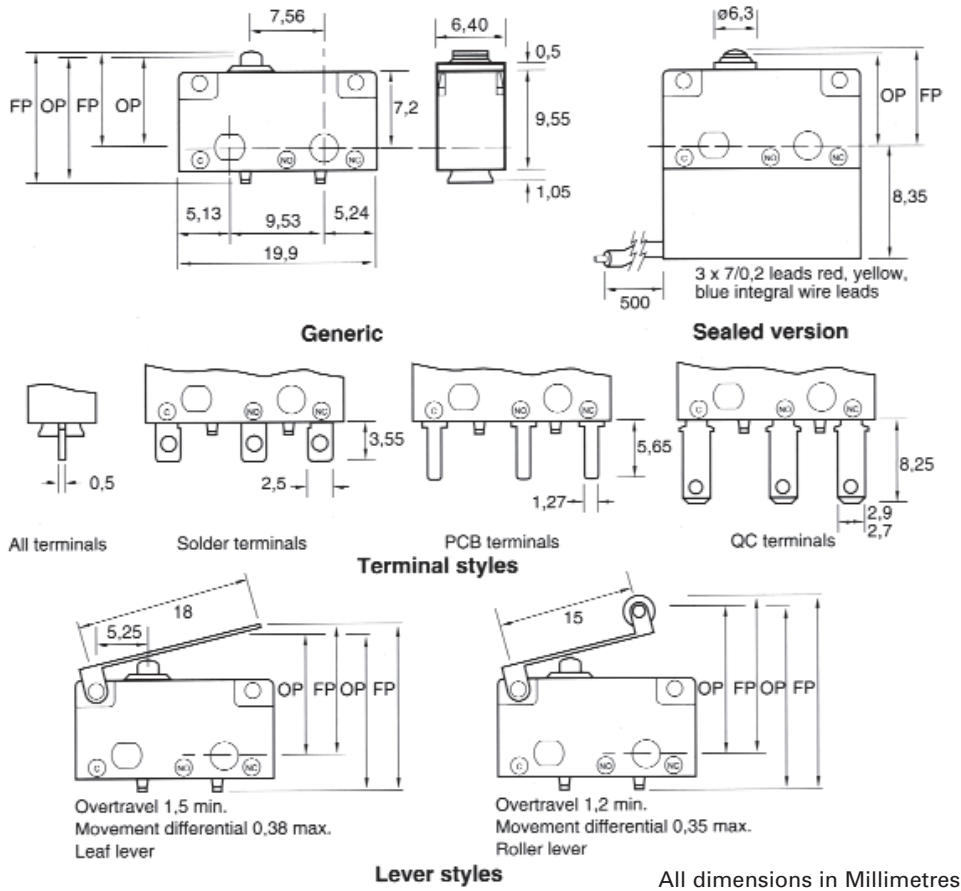
Part Number	Contacts	Actuator Style*	Terminal Style	Sealed	RoHS Compliant	IP67 Compliant
19N402	Silver	Plunger	Solder	Yes	✓	✓
19N402L18	Silver	Leaf lever	Solder	Yes	✓	✓
19N402R15	Silver	Roller lever	Solder	Yes	✓	✓
19N403	Silver	Plunger	Solder	No	✓	—
19N412	Gold	Plunger	Solder	Yes	✓	✓
19N502	Silver	Plunger	P.C.	Yes	✓	✓
19N503	Silver	Plunger	P.C.	No	✓	—
19N512	Gold	Plunger	P.C.	Yes	✓	✓
19N602	Silver	Plunger	Q.C.	Yes	✓	✓
19N603	Silver	Plunger	Q.C.	No	✓	—
19N702	Silver	Plunger	Wire Leads	Yes	✓	✓
19N712	Gold	Plunger	Wire Leads	Yes	✓	✓
19N703	Silver	Plunger	Wire Leads	No	✓	—
19N713	Silver	Plunger	Wire Leads	No	✓	—
19N920	Gold	Plunger	P.C. Right Angle (L)	Yes	—	✓
19N922	Gold	Lever	P.C. Right Angle (R)	Yes	—	✓

\*Note: Lever and roller lever actuator are available as options on most switches. Consult factory.

### STANDARDS / AGENCY / RATINGS:



PRODUCT DRAWINGS



MECHANICAL / ELECTRICAL CHARACTERISTICS:

**Overtravel:**  
.2mm (min) depress to case

**Movement differential:**  
.1mm reference

**Mechanical life:**  
10,000,000 operations

**Operating force:**  
2.0 N (203.9 gf) sealed  
1.5 N (153.0 gf) sealed

**Ingress protection:**  
IP67

**Temperature:**  
-40°C to +125°C  
(-40°F to +257°F)

**Body material:**  
Nylon 46

**Contacts:**  
Silver—Silver nickel alloy  
Gold—5 microns of gold on copper/nickel

**Terminals:**  
QC — Brass  
PCB — Tin plated brass  
Solder — Brass

**Electrical Rating (Silver):**  
250VAC (res.) — 5A (Max)  
250VAC (ind.) — 1A (Max)  
28VDC (res.) — 3A (Max)  
28VDC (ind.) — 1A (Max)

**Electrical Rating (Gold):**  
28VDC (res.) — 100mA (Max)

**Electrical Life (nominal):**  
100,000 operations

**Dielectric strength:**  
1000 VAC

**Insulation resistance:**  
1 G Ohm

**Contact resistance (initial):**  
20m Ω (max) gold,  
50m Ω (max) silver

**Contact bounce:**  
5 millisecond (max),  
1 millisecond per each pulse

BUTTON / LEVER POSITIONS:

Free position (F.P)

Standard switch to mounting holes.....	0.360 inches / 9,14mm (max)
Standard switch to PCB.....	0.486 inches / 12,35mm (max)
Sealed switch to mounting holes.....	0.368 inches / 9,35mm (max)
Leaf lever to mounting holes.....	0.492 inches / 12,50mm (max)
Leaf lever to PCB.....	0.618 inches / 15,70mm (max)
Roller lever to mounting holes.....	0.677 inches / 17,20mm (max)
Roller lever to PCB.....	0.803 inches / 20,40mm (max)

Operating point (O.P)

Standard switch to mounting holes.....	0.330 inches ±.016 / 8,40mm ± 0,40
Standard switch to PCB.....	0.457 inches ±.016 / 11,60mm ± 0,40
Sealed switch to mounting holes.....	0.335 inches±.016 / 8,50mm ± 0,40
Leaf lever to mounting holes.....	0.400 inches±.054 / 10,15mm ± 1,37
Leaf lever to PCB.....	0.527 inches ±.054 / 13,38mm ± 1,37
Roller lever to mounting holes.....	0.610 inches ±.045 / 15,50mm ± 1,14
Roller lever to PCB.....	0.719 inches ±.045 / 18,25mm ± 1,14

## Series 22

### MINIATURE 10 AMP DOUBLE-POLE / SIMULTANEOUS SNAP ACTION SWITCHES

This rugged double-pole double-break Butterfly® mechanism switch can be configured for Form XX, Form YY or Form ZZ switching. This unique design is ideal for your toughest applications where reliability is a must.



ACTUAL SIZE

### APPLICATIONS

- Pressure control sensors
- Pendant controls
- Door openers for transit equipment
- Valve actuator
- Lift trucks
- Interlock kiosk

### KEY FEATURES:

- Gold or silver contacts
- UL recognized and CSA certified
- Variety of terminal styles
- Roller lever and overtravel plunger actuator are available

### ORDERING INFORMATION:

#### Switches

Part Number	Terminals
<b>22-104</b>	End Solder
<b>22-204</b>	#4 Screw
<b>22-304</b>	Side Solder
<b>22-504</b>	Quick Disconnect .250

#### Actuator (see page 71 for additional specifications)

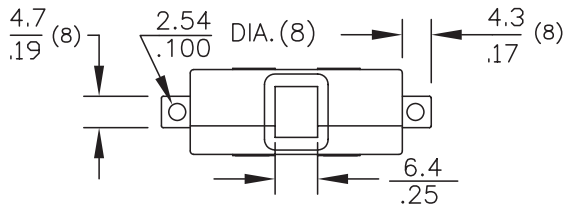
Part Number	Oper. Force	Release Force	Pretravel	Overtravel	Movement Diff.	Operating Point
<b>72-1160</b> Roller Lever (1)	10 oz max	1.5 oz min	.150 max	.035 min	.070 ± .015	1.0 ± .031
<b>72-2080</b> Over Travel (2)	17 ± 5 oz	4 oz min	.060 max	.215 min	.030 ± .007	.828±.031

(1) When used with 22-104 basic switch or 22-204 basic switch  
 (2) When used with 22-304 basic switch

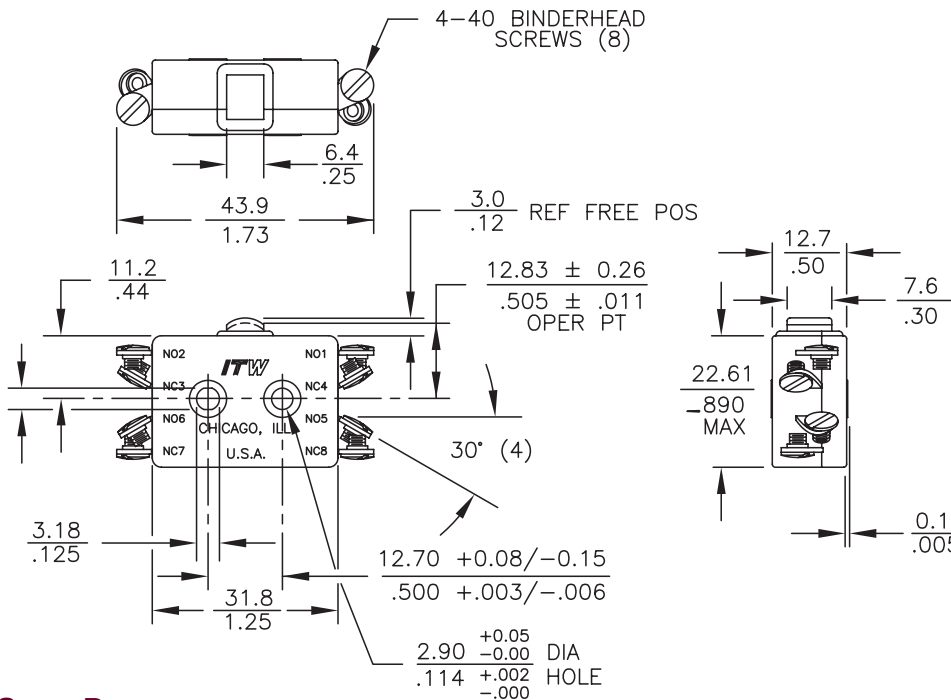
### STANDARDS / AGENCY / RATINGS:



## END SOLDER



## #4 SCREW



## MECHANICAL / ELECTRICAL CHARACTERISTICS:

**Pretravel:**  
0.060 inches max

**Overtravel:**  
0.015 inches min

**Operating Force:**  
17 ± 5 oz

**Release Force:**  
4 oz min

**Movement Differential:**  
0.030 inches ± .009

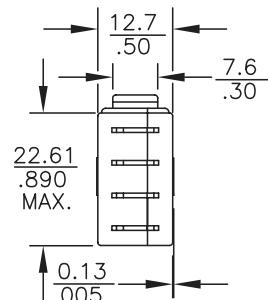
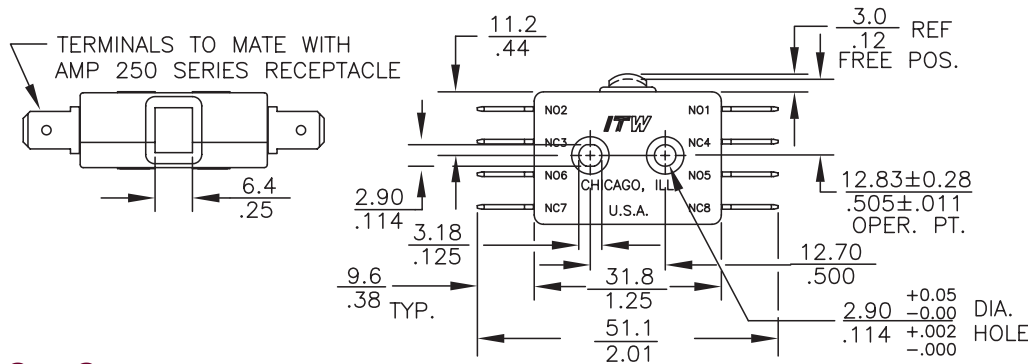
**Operating Point:**  
0.505 inches ± .011  
(from mounting hole centers)

**Circuit:**  
DPDT-DB (Form ZZ)

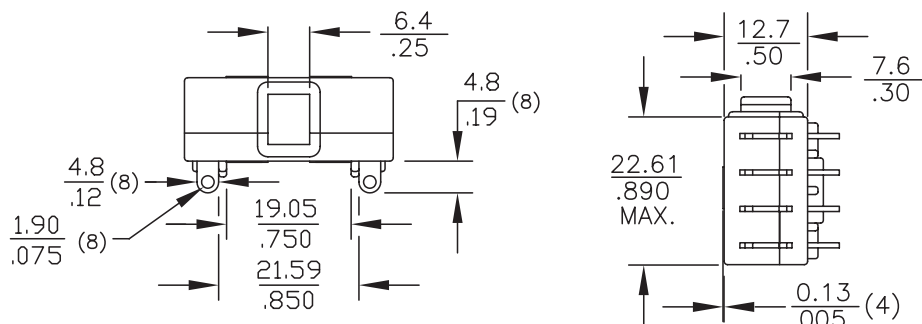
**Electrical Ratings:**

Circuitry	125/250 VAC	28 VDC
DPST-DB NO or NC (Form XX or YY)	10 amp (75-80% PF) 1/2 HP 125 VAC	10 amp Ind 15 amp Res
DPDT-DB (Form ZZ)	3/4 HP 250 VAC	7 amp Ind 10 amp Res

## QUICK DISCONNECT



## SIDE SOLDER





## Series 26

### SUB-MINIATURE 8 AMP DOUBLE POLE SNAP ACTION SWITCHES

This unique design has a DPDT-DB (Form ZZ) contact arrangement, or can be wired externally to provide two commons to form standard DPDT (Form CC) circuitry. This switch can control up to 4 isolated circuits.



### APPLICATIONS

- Aircraft rotary actuator
- Aircraft valve actuator
- Circuit breakers
- Aircraft contractors
- Industrial machinery

### KEY FEATURES:

- Gold or silver contacts
- Meets MIL-PRF-8805/77
- End or side terminals available
- UL recognized and CSA certified: 8 amps @ 125/250 VAC
- Roller lever, lever, short roller lever and bushing mount actuator are available

ACTUAL SIZE ACTUAL SIZE

### ORDERING INFORMATION:

#### Switches

Part Number	Simultaneity	Contacts	Terminals	RoHS Compliant
<b>26-804</b>	Simultaneous*	Silver**	End Solder	✓
<b>26-888051</b>	Ref. M8805/77-001	Gold Plated	End Solder	—
<b>26-904</b>	Simultaneous*	Silver**	Side Solder	✓
<b>26-988051</b>	Ref. M8805/77-002	Gold Plated	Side Solder	—

\* Within .004" of plunger travel.  
 \*\* For electrical loads under 250 mA, consult factory.

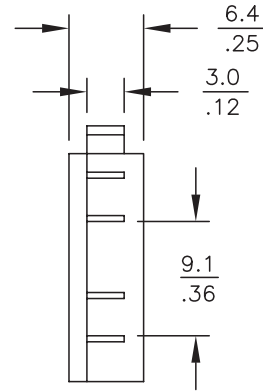
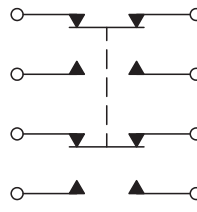
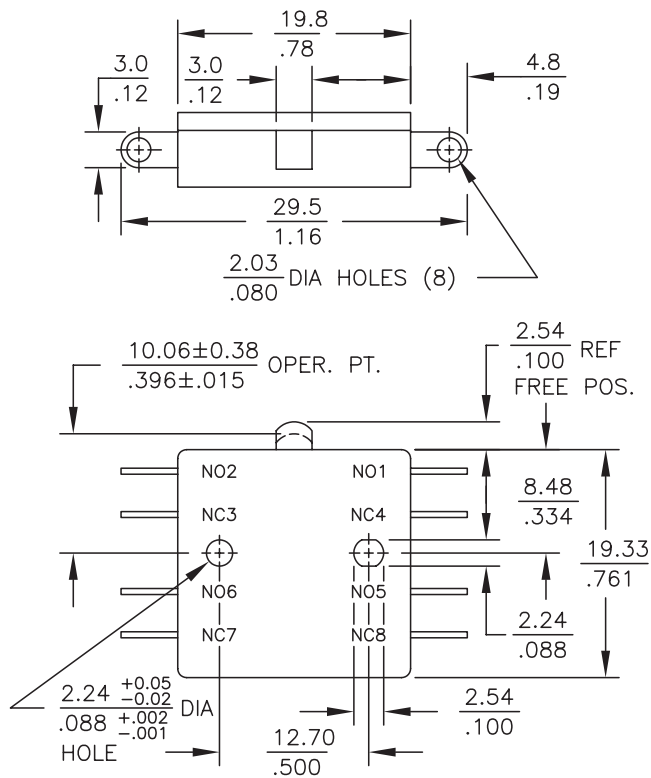
#### Actuator (see page 72 for additional specifications)

Part Number	Switch Series	Oper. Force	Release Force	Pretravel	Overtravel	Movement Diff.
<b>76-1200</b> Roller Lever	26	8 oz max	1 1/2 oz min	.130 max	.026 min	.054 ± .022
<b>76-1210</b> Lever	26	7 oz max	2 oz min	.155 max	.025 min	.065 max
<b>76-1220</b> Short Roller Lever	26	16 oz max	5 oz min	.050 max	.012 min	.020 ± .010 - .005
<b>76-22604</b> Bushing Mount	16	5 oz	—	.050 max	.156 min	—

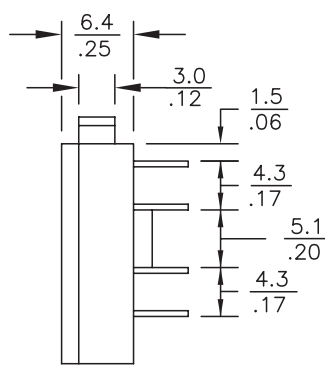
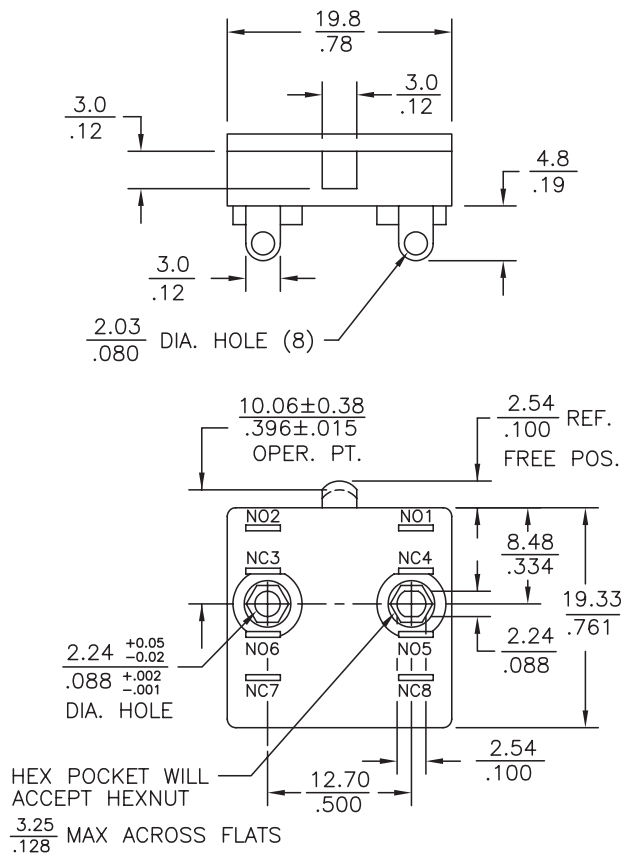
### STANDARDS / AGENCY / RATINGS:



END SOLDER



SIDE SOLDER



MECHANICAL / ELECTRICAL CHARACTERISTICS:

- Pretravel:**  
0.050 inches (Max)
- Overtravel:**  
0.012 inches (Min)
- Operating Force:**  
12 ± 4 oz
- Release Force:**  
5 oz (Min)
- Movement Differential:**  
0.020 inches ± .010 / .005
- Operating Point:**  
0.396 inches ± .015  
(from mounting hole centers)
- Circuit:**  
DPDT-DB (Form ZZ)
- Temperature Index:**  
To 275°F Ambient
- MIL-PRF-8805/7 QPL listed:**  
26-888051 M8805/77-001  
26-988051 M8805/77-002

Electrical Ratings:

Circuitry	Current	Voltage
DPDT-DB (Form ZZ)	8 Amps 5 Amps	125/250 VAC 75-80% PF 28 VDC

## Series KAP 26

### SUB-MINIATURE 8 AMP DOUBLE POLE/SIMULTANEOUS SNAP ACTION SWITCHES

Similar to Series 26 with improved materials and performance. Ideal for critical applications where long life and reliability are needed.



#### APPLICATIONS

- Aircraft rotary actuators
- Aircraft valve actuators
- Circuit breakers
- Aircraft contractors
- Industrial machinery
- Medical equipment

#### KEY FEATURES:

- Enhanced gold contacts for high or low power applications
- Thermoplastic case sealed to prevent flux intrusion
- Meets MIL-PRF-8805/77
- End or side terminals available
- Roller lever, lever, short roller lever and bushing mount actuators are available

ACTUAL SIZE

#### ORDERING INFORMATION:

##### Switches

Part Number	Simultaneity	Contacts	Terminals
<b>26-810</b>	Simultaneous*	Enhanced Gold	End Solder

\* Within .002" of plunger travel.

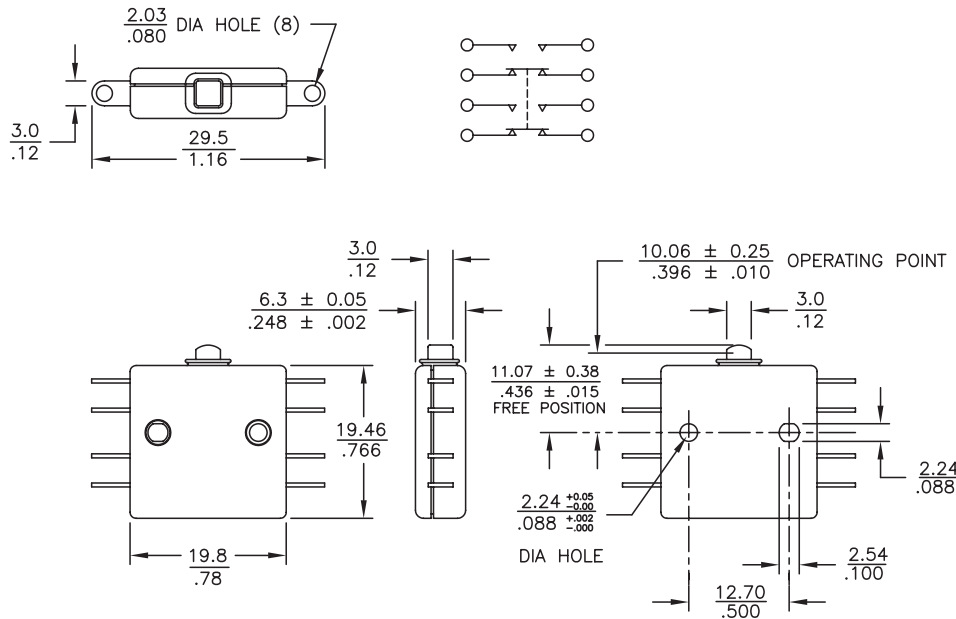
##### Actuator (see page 72 for additional specifications)

Part Number	Switch Series	Oper. Force	Release Force	Pretravel	Overtravel	Movement Diff.
<b>76-1200</b> Roller Lever	26	8 oz max	1 1/2 oz min	.130 max	.026 min	.054 ± .022
<b>76-1210</b> Lever	26	7 oz max	2 oz min	.155 max	.025 min	.065 max
<b>76-1220</b> Short Roller Lever	26	16 oz max	5 oz min	.050 max	.012 min	.020 ± .010 - .005

#### STANDARDS / AGENCY / RATINGS:



**END TERMINATION**



**MECHANICAL / ELECTRICAL CHARACTERISTICS:**

- Pretravel:** 0.060 inches (Max)
- Overtravel:** 0.020 inches (Min)
- Operating Force:** 18 ± 5 oz
- Release Force:** 5 oz (Min)
- Movement Differential:** 0.025 inches ± .010
- Operating Point:** 0.396 inches ± .010 (from mounting hole centers)
- Circuit:** DPDT-DB (Form ZZ)
- Temperature Index:** -85°F to +275°F Ambient
- MIL-PRF-8805 QPL Listed:** 26-810 M8805/77-003
- Electrical Ratings:** See chart to the left

**Electrical rating, 26-810:**

Load	Sea Level				70,000 Ft.	
	28 VDC DPDT	28 VDC 4 CKT	115 VAC 60 HZ DPDT	115 VAC 60 HZ 4 CKT	28 VDC DPDT	28 VDC 4 CKT
<b>Resistive</b>	8 amp	8 amp	6 amp	4 amp	8 amp	8 amp
<b>Inductive</b>	6 amp	4 amp	4 amp	4 amp	2 amp	1 amp
<b>Lamp</b>	0.5 amp	0.5 amp	2 amp	1 amp	—	—

## Series 65

### SEALED 10 AMP SUB-MINIATURE SWITCHES

These rugged metal enclosed sealed switches use the Butterfly® switch mechanism providing long-life, durability and reliability. These switches are ideal for demanding military and industrial applications.

### APPLICATIONS

- Aircraft valves
- Wheelchair lifts
- Machine tools
- Missiles and missile launchers
- Heavy industrial equipment

### KEY FEATURES:

- Meets the (watertight) requirements per MIL-PRF-8805 enclosure design symbol 3
- Gold contacts
- Variety of actuators available
- Solder terminals standard or wire leads available
- Temperature rating: -55°C to +85°C (-65°F to +185°F)
- MIL-PRF-8805 QPL listed switches available



ACTUAL SIZE

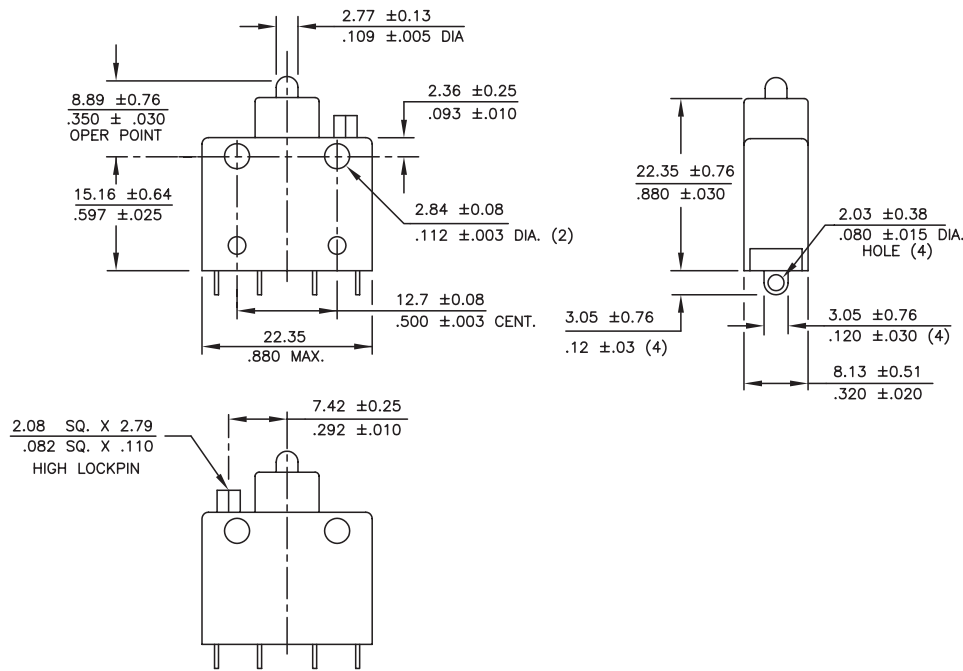
### ORDERING INFORMATION:

Part Number	Actuator	P.T.	O.T.	O.F.	R.F.	M.D.
65-201000	Pin plunger	.050 max	.012 min	24 ± 8 oz	8 oz min	.010-.030
65-301000	Roller lever	.115 max	.025 min	16 oz max	5 oz min	.058 max
65-401000	Over travel	.070 max	.187 min	36 oz max	8 oz min	.010-.030

### STANDARDS / AGENCY / RATINGS:



## PIN PLUNGER



## MECHANICAL / ELECTRICAL CHARACTERISTICS:

### Circuit:

SPDT-DB (Form Z)

### Temperature range:

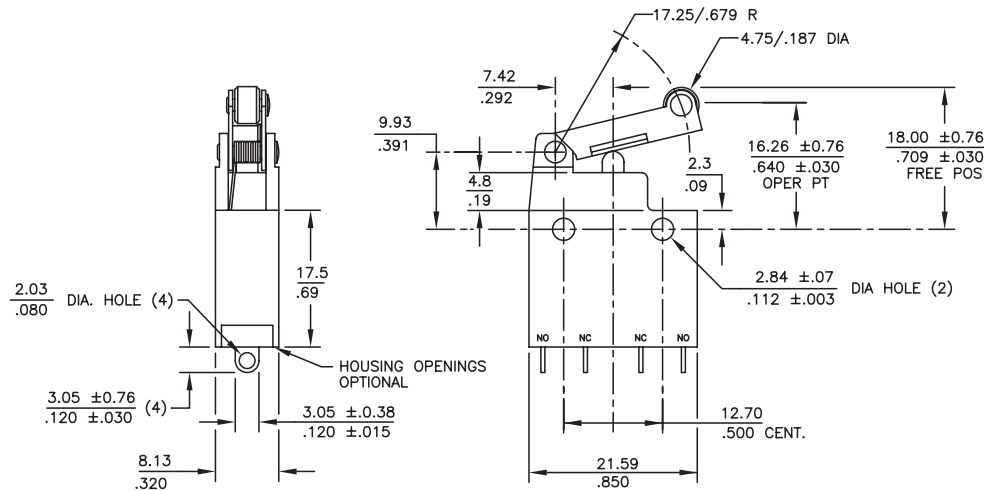
-55°C to +85°C

(-65°F to +185°F)

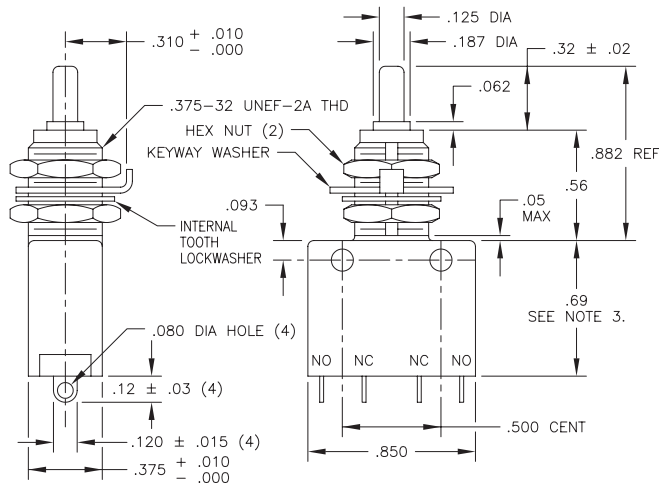
### Electrical Ratings (Typical):

Circuitry	125/250 VAC	28 VDC
SPDT-DB (Form Z)	10 A	5 A Ind.

## ROLLER LEVER



## OVER TRAVEL



## Series 76-6

### DOOR INTERLOCK SWITCHES FOR CABINET, SERVICE DOOR SAFETY

Door interlocks use 10 amp Butterfly® switch mechanisms to provide long life and reliability.



ACTUAL SIZE

### APPLICATIONS

- Computer door interlocks
- Audio-Visual equipment
- Oil exploration equipment
- Seismographic sending
- Process control enclosures
- Remote enclosure for telephone switches

### KEY FEATURES:

- Protection for testing and servicing electronic equipment
- Automatic interruption of power
- Manual set allows continuation of power for testing
- Restores power with closing of door or drawer
- UL recognized

### ORDERING INFORMATION:

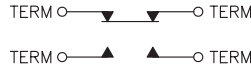
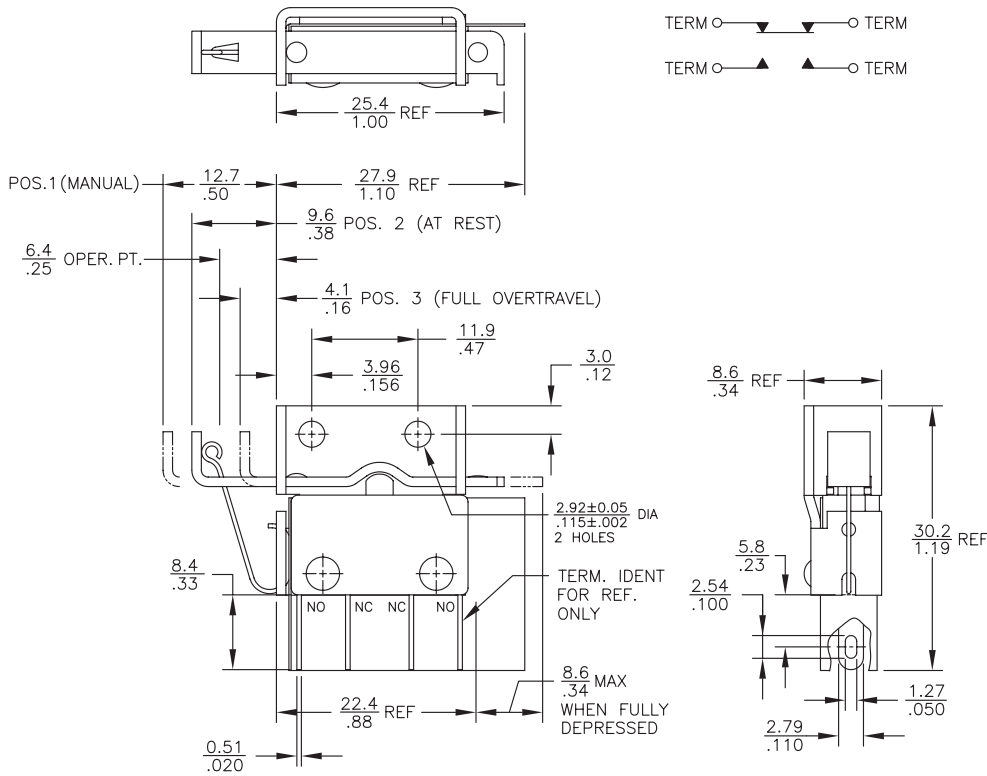
Part Number	CIRCUIT	125/250 VAC	28 VDC IND	TERMINALS
<b>76-6005</b>	SPDT (Form Z)	5A *	3A	Bottom Solder/ .110 QC

\* 75-80% Power Factor  
\*\* Contact Factory for Minimums

### STANDARDS / AGENCY / RATINGS:



## PRODUCT DRAWINGS



## MECHANICAL / ELECTRICAL CHARACTERISTICS:

**Circuit:**  
SPDT-DB

### Electrical Ratings:

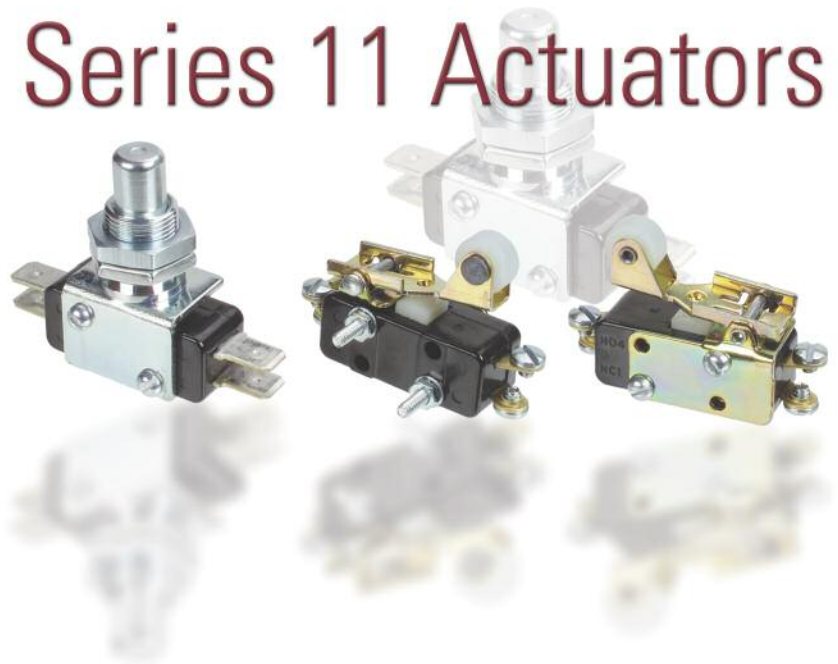
Circuitry	Current	Voltage
Form X or Y	10 Amps	125/250 VAC *
	10 Amps	28 VDC IND
Form Z	5 Amps	125/250 VAC
	3 Amps	28 VDC IND

\* UL and CSA Listed 75% PF



SEE PAGE 46  
FOR SWITCHES

# Series 11 Actuators



## KEY FEATURES:

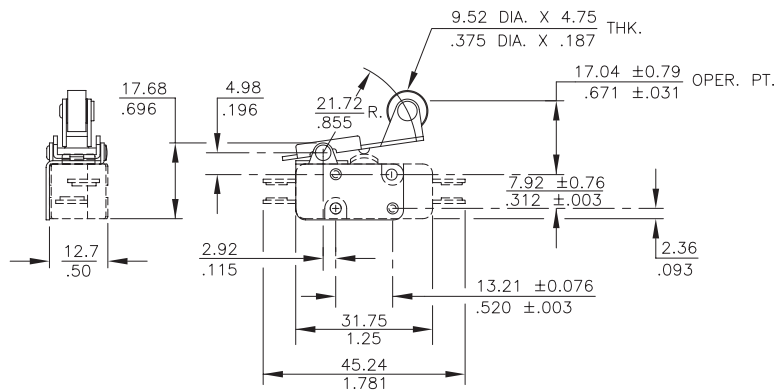
- Roller Lever
- Overtravel

## MECHANICAL CHARACTERISTICS\*:

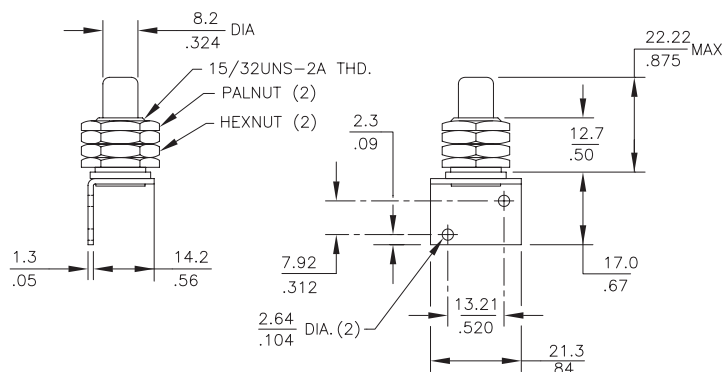
Part Number	Oper. Force	Release Force	Pretravel	Overtravel	Movement Diff.	Operating Point
<b>71-1040</b> Roller Lever	3.5 oz max	2 oz min	.093 max	.062 min	.030 ± .015	.671 ± .031
<b>71-2010</b> Overtravel Plunger	8 ± .3 oz	4 oz min	.050 max	.215 min	.020 ± .005	.828 ± .015

\*Mechanical characteristics when used with Basic Switch 11-104.

## 71-1040



## 71-2010



# Series 16 Actuators

SEE PAGES 50 & 52  
FOR SWITCHES



**KEY FEATURES:**

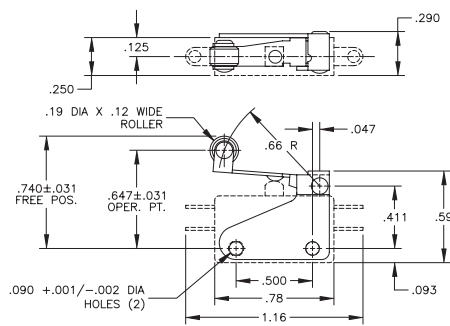
- Roller Lever
- Short Roller Lever
- Lever
- Bushing Mount

**MECHANICAL CHARACTERISTICS:**

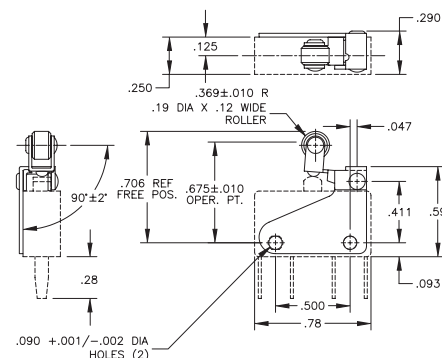
Part Number	Switch Series	Oper. Force	Release Force	Pretravel	Overtravel	Movement Diff.
<b>76-1200</b> Roller Lever	16	4 oz max	1 oz min	.125 max	.025 min	.045 ± .011
<b>76-1210</b> Lever	16	2.5 oz max	1 oz min	.125 max	.025 min	.047 ± .013
<b>76-1220</b> Short Roller Lever	16	5 + 3 oz - 2 oz min	2 oz min	.050 max	.023 min	.020 ± .005
<b>76-22604</b> Bushing Mount	16	5 oz	—	.050 max	.156 min	—

Notes: (1) Characteristics may vary depending on type of basic switch used in assembly. (2) All actuators supplied with mounting hardware.

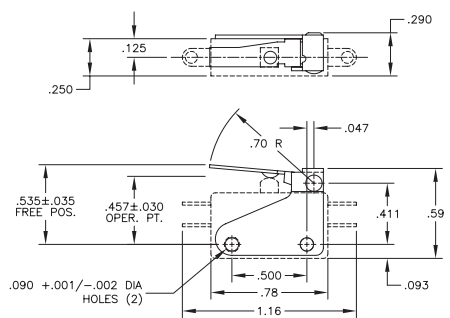
**76-1200**



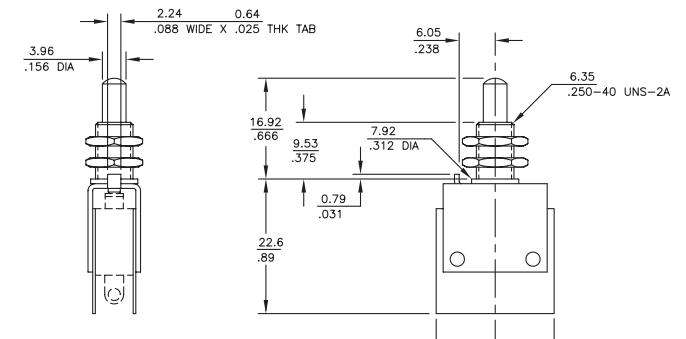
**76-1220**



**76-1210**



**76-22604**



SEE PAGE 54  
FOR SWITCHES

# Series 18 Actuators



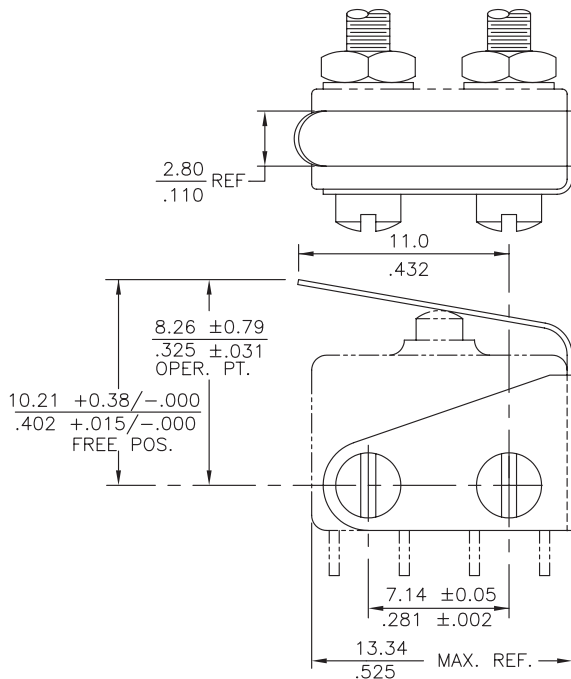
## KEY FEATURES:

- Spring Lever
- Roller Lever

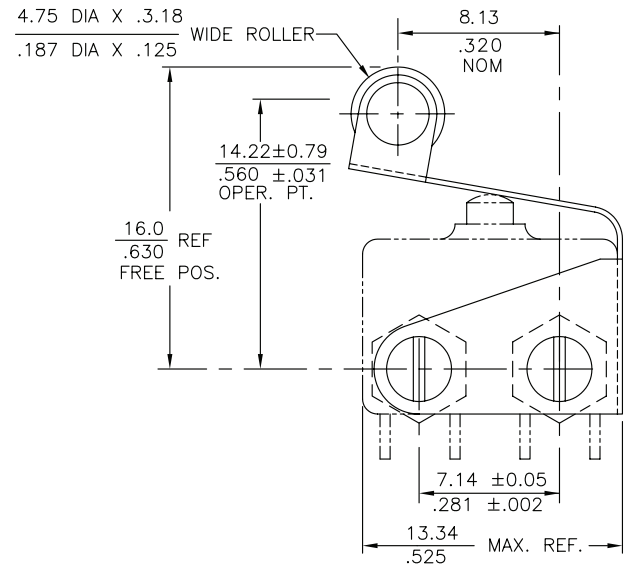
## MECHANICAL CHARACTERISTICS:

Part Number	Oper. Force	Release Force	Pretravel	Overtravel	Movement Diff.	Operating Point
<b>78-3000</b> Spring Lever	6 ± 2 oz	2 oz min	.125 max	.030 min	.030 ± .015	.325 ± .030
<b>78-3100</b> Roller Lever	6 ± 2 oz	2 oz min	.125 max	.030 min	.035 ± .015	.560 ± .030

## 78-3000



## 78-3100



# Series 22 Actuators

SEE PAGE 58  
FOR SWITCHES



**KEY FEATURES:**

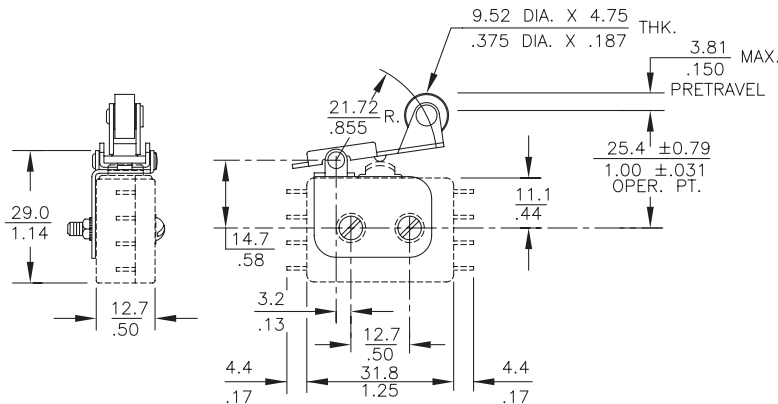
- Roller Lever
- Overtravel

**MECHANICAL CHARACTERISTICS:**

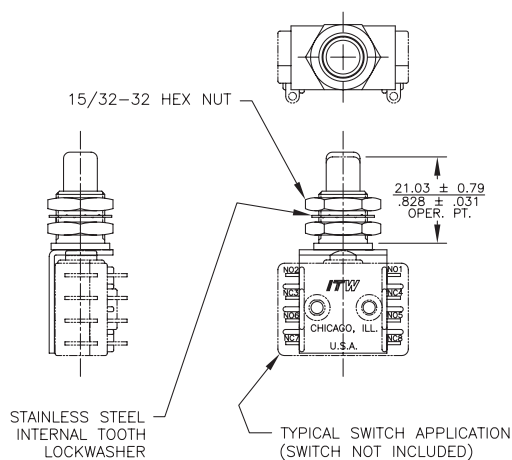
Part Number	Oper. Force	Release Force	Pretravel	Overtravel	Movement Diff.	Operating Point
<b>72-1160</b> Roller Lever (1)	10 oz max	1.5 oz min	.150 max	.035 min	.070 ± .015	1.0 ± .031
<b>72-2080</b> over travel (2)	17 ± 5 oz	4 oz min	.060 max	.215 min	.030 ± .007	.828 ± .031

(1) When used with 22-104 basic switch or 22-204 basic switch. (2) When used with 22-304 basic switch

**72-1160**



**72-2080**



SEE PAGE 60 & 62  
FOR SWITCHES

# Series 26 Actuators



## KEY FEATURES:

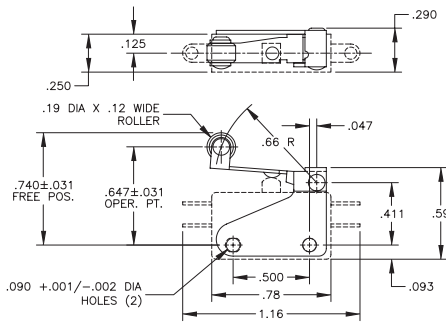
- Roller Lever
- Short Roller Lever
- Lever
- Bushing Mount

## MECHANICAL CHARACTERISTICS:

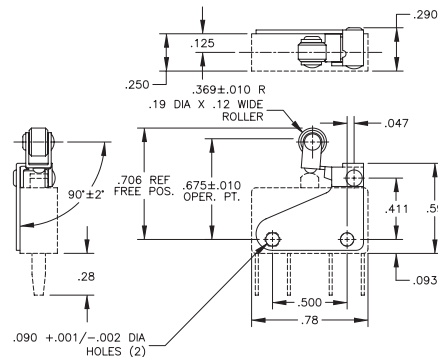
Part Number	Switch Series	Oper. Force	Release Force	Pretravel	Overtravel	Movement Diff.
<b>76-1200</b> Roller Lever	26	8 oz max	1.5 oz min	.130 max	.026 min	.054 ± .022
<b>76-1210</b> Lever	26	7 oz max	2 oz min	.155 max	.025 min	.065 max
<b>76-1220</b> Short Roller Lever	26	16 oz max	5 oz min	.050 max	.012 min	.010 ± .005
<b>76-22604</b> Bushing Mount	16	5 oz	—	.050 max	.156 min	—

Notes: (1) Characteristics may vary depending on type of basic switch used in assembly. (2) All actuators supplied with mounting hardware.

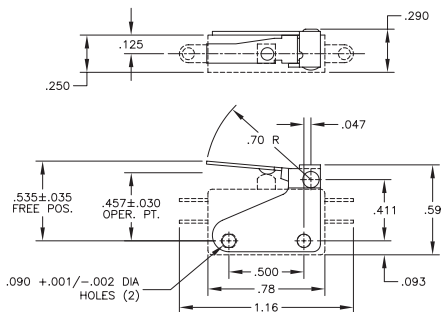
### 76-1200



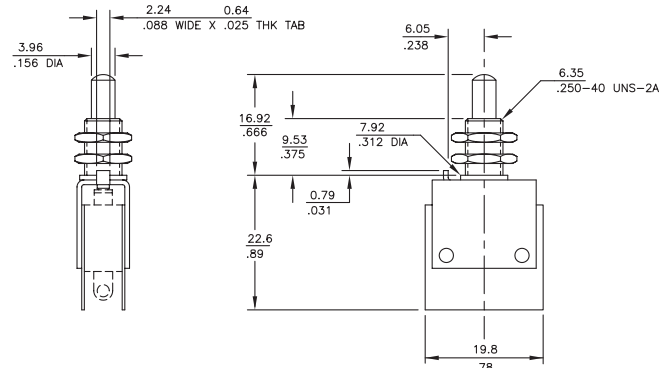
### 76-1220



### 76-1210



### 76-22604





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[MDJ15](#) [DA15POLF](#) [DA15POL](#) [48M-111G](#) [SDA15P](#) [DC37PF](#) [DB25SNF](#) [DB25SF](#) [SDA15POL](#) [CF2050](#) [65-301000](#) [40-4-10](#) [SDA15PTD](#)  
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[SDD50PTD](#) [57-112R](#) [76-9116/439088](#) [57M211G](#) [78-3000](#) [22-104](#) [40-2-10](#) [59-517](#) [48-1-RB-N-GR-B](#) [76-5910B](#) [59-412G](#) [4959111](#)  
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