

# MICROSWITCHES - DOUBLE BREAK

## 83106 / 83109

- › Double-break flexible leaf snap-action mechanism
- › Momentary or maintained action (bistable/reset models)
- › Very long life
- › Ratings from 10 mA 4 V $\overline{\text{---}}$  to 10 A 250 V $\sim$  and 1/2hp 125 V $\sim$   
- 3/4 hp 250 V $\sim$
- › Operating temperature -40 °C up to +125 °C
- › Choice of connections, side or front
- › Mounting plates for multi-pole switch assemblies, up to 6 SPDT
- › Wide choice of actuators on 2 symmetric fixing positions



### Main specifications

	Side outputs 831060		Side outputs Bistable Lever 831064	Side outputs Bistable Button 831067	Front outputs 831090			
	Standard	Long Shaft	Standard	Standard	Standard	Long Shaft		
<b>Function</b>	<b>Connections</b>		<b>Actuators</b>					
I (changeover)	W1 (screw)	No	83106071	83106070	83106408	83106703	-	-
I (changeover)	W2 (solder)	No	83106030	83106166	83106409	83106704	83109004	83109008
I (changeover)	W3 (QC 6.3x0.8)	No	83106022	83106029	83106411	83106701	-	-
R (normally closed)	W1 (screw)	No	83106048	•	•	•	-	-
R (normally closed)	W2 (solder)	No	83106001	83106021	•	•	83109009	•
R (normally closed)	W3 (QC 6.3x0.8)	No	83106057	83106062	•	•	-	-
C (normally open)	W1 (screw)	No	83106025	83106034	•	•	-	-
C (normally open)	W2 (solder)	No	83106126	83106019	•	83106708	83109002	•
C (normally open)	W3 (QC 6.3x0.8)	No	83106050	83106054	•	•	-	-
Configurations with actuators	Yes		See page 6	See page 6	See page 6	See page 6	See page 6	See page 6
<b>Electrical characteristics</b>								
Rating nominal / 250 V AC (A)	10	10	10	10	10	10	10	10
Rating thermal / 250 V AC (A)	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
<b>Mechanical characteristics</b>								
Max. Operating force (N)	4		0.45 *	2 *	4			
Min. Release force (N)	1		-	-	1			
Max. Allowable overtravel force (N)	20		3 *	20 *	20			
Max. Rest position (mm)	12.65		25.5 **	12.65	12.65			
Operating position (mm)	11.45 $\pm$ 0.2-0.25		19 $\pm$ 1.5	11.45 $\pm$ 0.2-0.25	11.45 $\pm$ 0.2-0.25			
Max. Total travel position	10.55		14 ***	10.7	10.55			
Differential travel (mm)	0.5 $\pm$ 0.2		3 $\pm$ 1 ****	0.5 $\pm$ 0.2	0.5 $\pm$ 0.2			
Min. Overtravel (mm)	0.7		2	0.55	0.7			
Ambient operating temperature (°C)	-40 $\rightarrow$ +85		-40 $\rightarrow$ +85	-40 $\rightarrow$ +85	-40 $\rightarrow$ +85			
Mechanical life (operations)	10 <sup>7</sup>		10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>7</sup>			
Contact gap (mm)	2 x 0.4		2 x 0.4	2 x 0.4	2 x 0.4			
Weight (g)	8		9	8	8			

\* both for actuation and reset )  
 \*\* including lever play )  
 \*\*\* Min. Total travel position at F', including lever play ) → see «Dimensions/Products/831064» for F, F' measurement points  
 \*\*\*\* considered at F, for both actuation and reset )

### Additional specifications

- Case, Button: PA66 (UL 94-V2 / GWFI 850 °C)
- Button: PA66
- Moving blade: beryllium copper
- Contacts: silver alloy (gold-plated silver alloy: on request)
- Terminals: brass (except W2: copper nickel)
- Levers: zinc-plated steel, polyamide roller
- Fixing hole inserts: brass
- Levers, Mounting plates, Screws: zinc-plated steel
- Plastic levers, Rollers: polyamide
- Ball B9: stainless steel
- Degree of protection: IP40 (mechanism)
- Recommended min actuating speed: 0.01 mm/s
- Protection against electric shock: see «installation recommendations»
- Conformity / Certifications: on request /

Standard product

Product made to order



Contact us

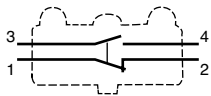
Product adaptations



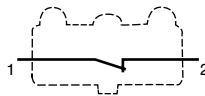
- › Special levers : special shapes and lengths, two-pole levers with pallet, flexible, plastic, ...
- › Dual-current version with gold plated contacts for use from 10 mA to 5 A (DORE)
- › AgPd contacts for infrequent switching in corrosive atmosphere up to 1 A (AGPD)
- › AgNi40 contacts for very high service life. 5 A max current. (AGNI)
- › Higher operating force : max 7.5 N
- › Special connections : screw long (W5), silver plated (W3/AG), solder with hole (W7), angled, ...
- › High operating temperature : +125 °C (glass reinforced housing)
- › Specific mounting holes : Ø 2 to 3.4mm, with metal or plastic inserts
- › Housing with plane upper face (without lever fixing ears)
- › Single and multi-pole versions on metal plates, factory mounted (83321, 83322, 83323, 83324)
- › Long overtravel model : min 4.3 mm (83158), with positive opening action variant acc. IEC 60947-5-1 Annex K (831585)
- › cURus approved versions

Principles

Double break snap-action switch  
Changeover - SPDT (form Za)



Normally closed - SPST-NC (form Y)



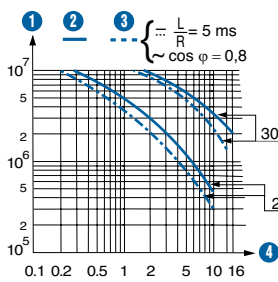
Normally open - SPST-NO (form X)



Both circuits must be used at same polarity

Curves

Operating curve for types 831060 / 831064 / 831067 / 831090



- 1 Number of cycles
- 2 Resistive circuit
- 3 Inductive circuit
- 4 Current in Amps

Making & breaking capacities IEC/EN 60947-5-1 (6000 cycles)

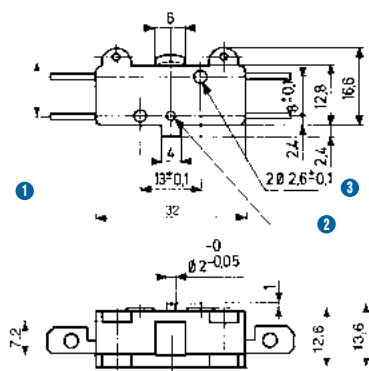
AC-12 (resistive load)	16 A 24 V~
	16A 250 V~
AC-15 (electromagnetic load)	6 A 24 V~
	4 A 250 V~
DC-12 (resistive load)	16 A 24 V=
DC-13 (electromagnetic load)	5 A 24 V=

For other ratings please consult us

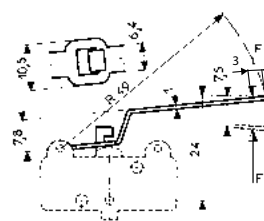
Dimensions

Product

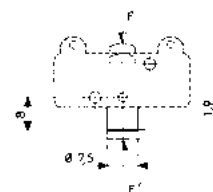
831060



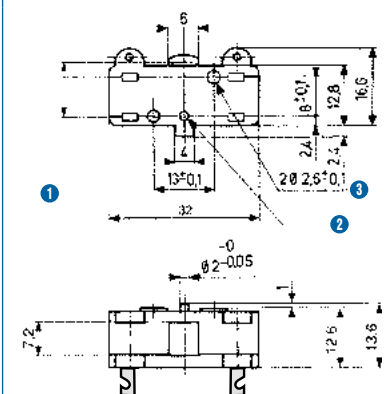
831064



831067



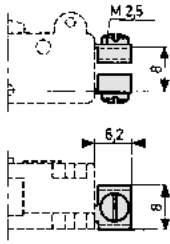
831090



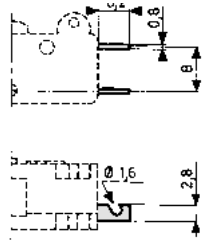
- 1 Operating position
- 2 Ø 2+0.05 +0.01 Depth 1.2
- 3 Metal inserts

### Connections

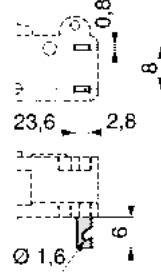
**W1 screw**  
83106



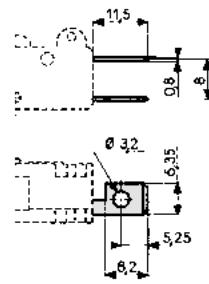
**W2 solder**  
83106



83109

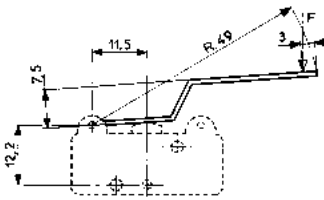


**W3 quick-connect 6.3x0.8**  
83106

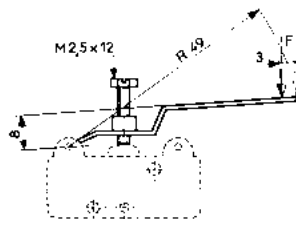


### Actuators

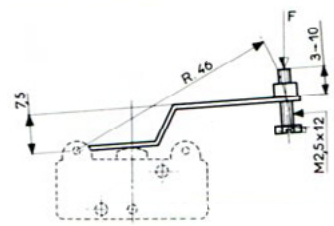
**A flat**



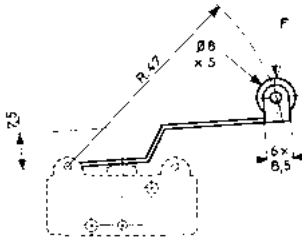
**B flat adjustable**



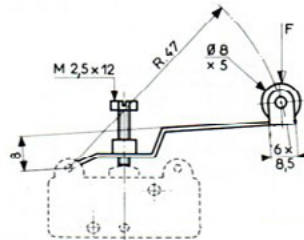
**D adjustable on end**



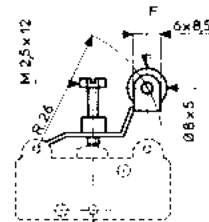
**E R47**



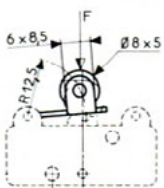
**F roller adjustable**



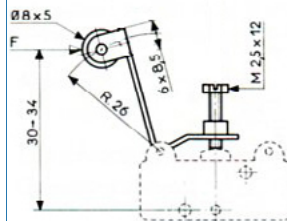
**Q short roller adjustable**



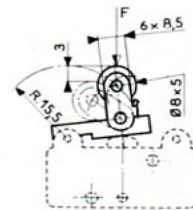
**V extra-short roller**



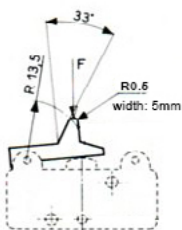
**G side roller adjustable**



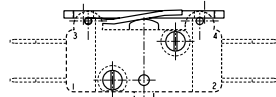
**V3 one-way roller**



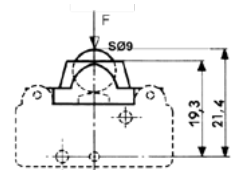
**V4 plastic dummy roller**



**M short flat**



**B9 ball**

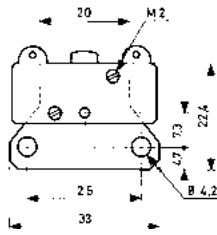


Cross-section of levers A, B, D, E, F, Q, G, M, V : 6.4 x 1 mm

Other shapes and dimensions: please consult us

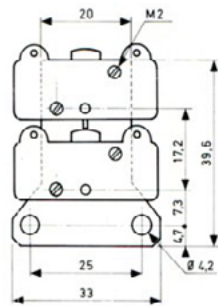
### Mounting accessories

**H horizontal 1-pole, bottom fixing**

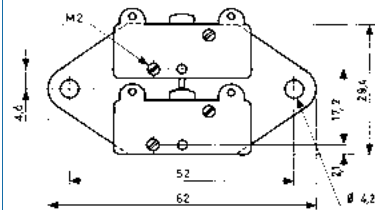


Unless indicated, the thickness of plates is 1.5 mm

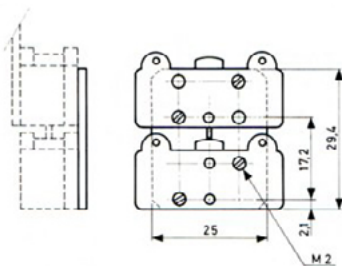
**O horizontal 2-pole, bottom fixing**



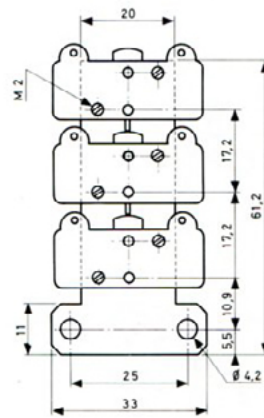
**O2 horizontal 2-pole, side fixing**



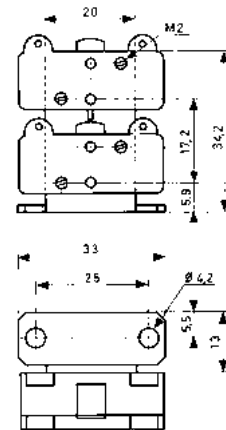
**L horizontal 2-pole, through switch fixing**



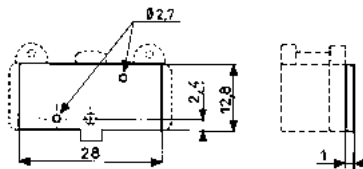
**O3 horizontal 3-pole, bottom fixing**









**K vertical 1-pole, bottom fixing  
K2 vertical 2-pole, bottom fixing  
K3 vertical 3-pole, bottom fixing**









**Y Side plate**



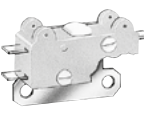

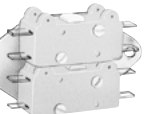



**Actuator and mounting accessories**

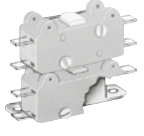

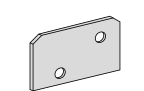



Part numbers for standard actuators	70500888	70500828	70500809	70500813	70500831	70500840
Actuators	Flat A R49	Flat adjustable B R47	Adjustable on end D R46	Roller E R47	Roller adjustable F R47	Roller adjustable Q R26
						
Operating force - max.	N	1.2	1.2	1.2	1.2	2.8
Release force - min.	N	0.25	0.25	0.25	0.2	0.45
Pretravel - max.	mm	6.2	6.2	6.2	6.3	3.4
Operating position		17.5 ±1.8	18.5-27.5 ±1.8	20.5-27.5 ±1.8	25.9 ±1.8	23.4-32.7 ±1.8
Differential travel	mm	2.1 ±0.9	2.1 ±0.9	2.1 ±0.9	2.1 ±0.9	1.05 ±0.4
Overtravel min.	mm	1.6	2.8	1.6	1.6	1.5

Part numbers for standard actuators	70500846	70500837	70500870	70500234	70500896	70500170
Actuators	Roller V R412.5	Side roller adjustable G R6	One-way roller V3 R15.5	Plastic dummy roller V4 R13.5	Flat M R19.5	Ball B9
						
Operating force - max.	N	4	2.8	4	4.6	3
Release force - min.	N	1	0.45	0.8	1	0.7
Pretravel - max.	mm	1.45	3.4	1.45	1.5	1.35
Operating position		20.75 ±0.4	20.5-29.5 ±1*	26.45 ±0.4	19.65 ±0.4	20.4 ±0.3
Differential travel	mm	0.5 ±0.2	1.1 ±0.5	0.5 ±0.2	0.5 ±0.2	0.7 ±0.3
Overtravel min.	mm	0.4	1.5	0.4	0.4	0.7

\* measured horizontally from button axis

Standard mounting of levers as shown in dimensional drawings (= left mounting) . Right mounting on request (/D).

Part numbers for standard accessories	70500208	70500219	70500218	70500207	70500770	70500897
Accessories	Horizontal 1-pole bottom fixing mounting plate H	Horizontal 2-pole bottom fixing mounting plate O	Horizontal 2-pole side fixing mounting plate O2	Horizontal 2-pole through switch fixing mounting plate L	Horizontal 3-pole bottom fixing mounting plate O3	Vertical 1-pole bottom fixing mounting plate K
						

Part numbers for standard accessories	70500216	70500767 *	70500206	70599106	70599102	70599110
Accessories	Vertical 2-pole bottom fixing mounting plate K2	Vertical 3-pole bottom fixing mounting plate K3	Side plate Y	Screw for mounting plate M2 x 14.5 (for 1 switch +1 plate)	Screw for mounting plate M2 x 16 (for 1 switch +2 plates)	Screw for mounting plate M2 x 27.5 (for 2 switches +1 plate)
						

\* Please consult us

**83106 / 83109 microswitches with referenced actuators**

Actuators		A	E	Q	V	B9
standard mounting (on left)		70500888	70500813	70500840	70500846	70500170
<b>831060</b>	I W1	83106144	•	83106291	83106153	83106150
	I W2	83106155	83106095	•	83106361	83106089
	I W3	83106157	83106093	83106125	83106162	83106158
<b>831060 AXLON</b>	I W1	•	•	•	•	•
	I W2	•	•	•	83106092	•
	I W3	•	•	•	83106376	83106362
<b>831090</b>	I W2	83109071	•	83109020	83109006	83109015
<b>831090 AXLON</b>	I W2	•	•	•	•	83109074

**Installation recommendations**

See "Basic technical concepts"

To ensure protection against electric shock after installation in the application, please consult us when conductive parts are located within 3 mm from case bottom face (opposite to button side).

**Caution - Risk of electric shock:** for long shaft models (AXLON) and for any other concerned variant, please note that the metal shaft protruding from case bottom face is a live part. Appropriate measures to be taken by the user to avoid electric shock.

**How to order**

Use the 8 digit part numbers when they are defined

Other cases, precise: Type of microswitch\*\* - Function - Connection - Contact material\* - Approval\* - Actuator\* - Mounting position\* - Adaptation\*

\* if needed \*\* if Long shaft model, add AXLON

Example: 831060 AXLON R W3 DORE UL V3/D

Standard product

Product made to order

Contact us

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