

# MINIATURE MICROSWITCHES - SEALED

## V3S - 83169

- › High precision flexible leaf snap-action mechanism
- › Operation without balance-point, even at extremely slow actuating speed
- › Excellent resistance to harsh environments - IP67/IP69 protection
- › High resistance to shock and vibration - Very long life
- › Operating temperature -40 °C up to 130 °C
- › Wire lead or cable output
- › Tight switching hysteresis versions: 0.07 mm max differential travel
- › Ratings from 1 mA 4 V<sub>DC</sub> to 8 A 250 V<sub>AC</sub> and 1/4 HP 125-250 V<sub>AC</sub>
- › Wide choice of actuators on 4 possible fixing positions (pre-assembled or retrofittable)



### Main specifications

		Standard 831690	Reduced differential travel 831694	Dual-current 831698	Dual-current Reduced differential travel 831699
<b>Function</b>	<b>Connections</b>				
I (changeover)	D0.5	83169002	83169405	83169802	83169905
I (changeover)	G0.5	83169001	83169404	83169801	83169904
I (changeover)	C0.5	83169015	83169406	83169803	83169906
I (changeover)	Y0.5	83169046	83169442	83169820	83169913
I (changeover)	D - G - C - Y *	●	●	●	●
R (normally closed)	D - G - C - Y *	●	●	●	●
C (normally open)	D - G - C - Y *	●	●	●	●
* wire length or cable length on demand					
<b>Electrical characteristics</b>					
Rating nominal / 250 V AC (A)		8	5	5**	5**
Rating thermal / 250 V AC (A)		10	6	6	6
<b>Mechanical characteristics</b>					
Maximum operating force (N)		4.5	4.5	4.5	4.5
Min. Release force (N)		1	1	1	1
Maximum total travel force (N)		8	8	8	8
Max. Allowable overtravel force (N)		20	20	20	20
Rest position max. (mm)		15.9	15.9	15.9	15.9
Operating position (mm)		14.7±0.5	14.7±0.5	14.7±0.5	14.7±0.5
Maximum differential travel (mm)		0.35	0.07	0.35	0.07
Min. overtravel (mm)		1	0.4	1	0.4
Ambient operating temperature-wires (°C)		-40 → +105 °C	-40 → +105 °C	-40 → +105 °C	-40 → +105 °C
Ambient operating temperature-cable (°C)		-40 → +90 °C	-40 → +90 °C	-40 → +90 °C	-40 → +90 °C
Mechanical life (operations)		5 x 10 <sup>6</sup>	5 x 10 <sup>6</sup>	5 x 10 <sup>6</sup>	5 x 10 <sup>6</sup>
Contact gap (mm)		0.4	0.4	0.4	0.4
Weight (g)		30	30	30	30

### Additional specifications

- Case: PBT GF (UL 94-V0 / GWFI 960 °C)
- Button: stainless steel
- Membrane: fluorosilicone rubber
- Moving blade: silver-plated beryllium copper
- Contacts: silver alloy, micro-profile  
gold alloy on silver alloy, crossbar (dual-current)
- Wire leads, cable: copper, PVC insulated
- Levers: stainless steel, polyamide roller
- Degree of protection: IP67/IP69
- Protection against electric shock : models with cable output on left are suitable for Class II equipment up to 250 V without additional protection
- Recommended min actuating speed: 0.001 mm/s

### Product adaptations



- › Special levers: special shapes and lengths, flexible levers, adjustable, pinned, ....
- › Special leads and cables, EN 50306 halogen free versions, full wiring with custom connector
- › High operating temperature: +130 °C
- › Long overtravel variant (min 3.5 mm) with metal or plastic plunger, also suitable for lateral approach up to 30° (SP4978, SP4988)
- › Adjustable fixing by threaded barrel: see 83581
- › Reinforced housing with metal insert and cable output for very severe conditions
- › Variant with plastic button for double insulation (SP4965)
- › Integrated varistor for extended service life on DC inductive load
- › cURus approved versions

Standard product

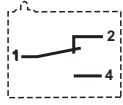
Product made to order



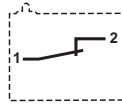
Contact us

## Principles

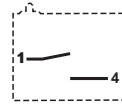
Single break snap-action switch  
Changeover - SPDT (form C)



Normally closed - SPST-NC (form B)

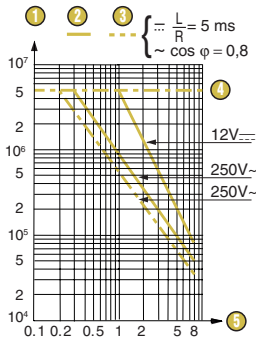


Normally open - SPST-NO (form A)

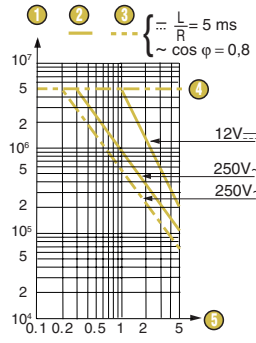


## Curves

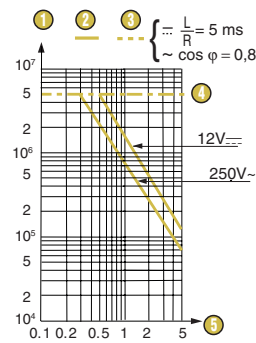
Operating curve for type 831690



Operating curve for type 831694



Operating curve for types 831698/831699



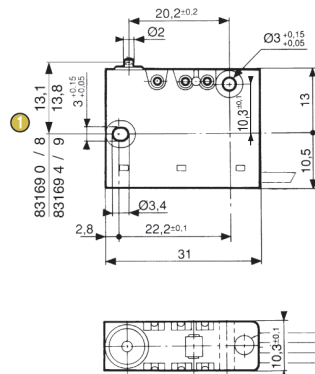
- 1 Number of cycles
- 2 Resistive circuit
- 3 Inductive circuit
- 4 Mechanical life limit
- 5 Current in Amps

\*\* Models 831698 and 831699 are designed to operate equally well on low-current (1 mA 4 V minimum recommended) or medium-current (5 A maximum) circuits. However, a given product should only be used to switch one type of circuit during its working life.

## Dimensions

### Product

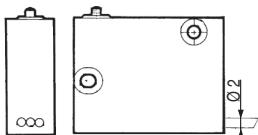
83169



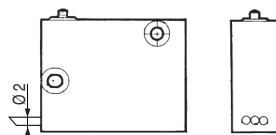
1 Total travel position

### Connections

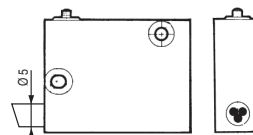
D wire output on right



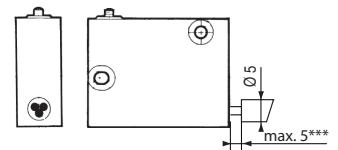
G wire output on left



C cable output on left



Y cable output on right



\*\*\*Outer jacket stripping

Wire characteristics:

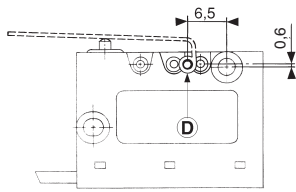
- 1: black (common)
- 2: brown (NC)
- 4: blue (NO)
- Cross section: 1 mm<sup>2</sup>
- Standard length: 0.5 m (other lengths on request)

Cable characteristics:

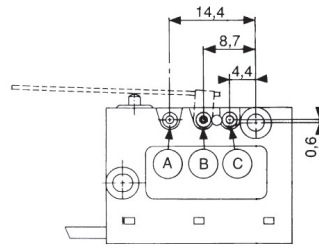
- 1: black (common)
- 2: brown (NC)
- 4: grey (NO)
- Cross section: 3 x 0.75 or 2 x 0.75 mm<sup>2</sup>
- Standard length: 0.5 m (other lengths on request)

## Actuator mounting positions

139-type levers (pinned)

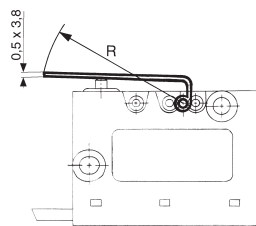


161-type levers (clipped-on)

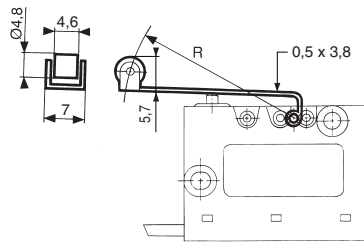


## Actuators

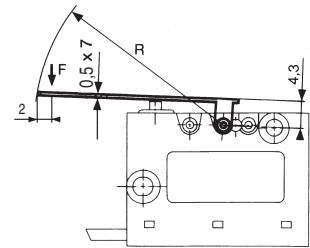
139AX flat



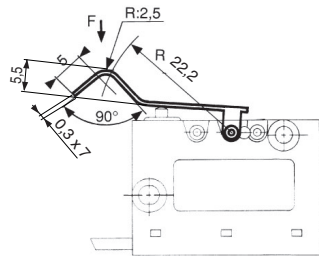
139EX roller



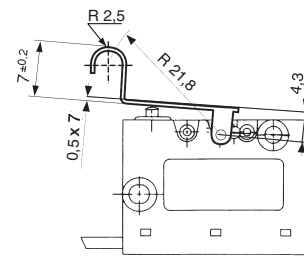
161A flat



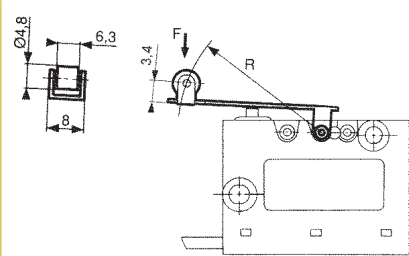
161F dummy roller



161G dummy roller

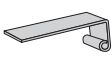
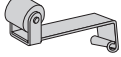








161E roller



Other shapes and dimensions: consult us

## Actuators and mounting accessories

Part numbers for standard actuators		79215740		70507524		79215742			70507529				
Actuators	Flat 139 AX R29.7*	Roller 139 EX R28.7*	Flat 161A R14.2 R25.4			Roller 161E R13.6 R24.1							
													
Fixing position	D	D	A	B	A	B	C	A	B	A	B	C	
Operating force - max.	N	2.5	2.5	2.5	4.5	1.4	2.5	3.5	2.5	4.5	1.4	2.5	3.5
Release force - min.	N	0.4	0.4	0.5	1	0.25	0.5	0.6	0.5	1	0.25	0.5	0.6
Operating position	mm	14.3 <sup>±1.2</sup>	19.4 <sup>±1.3</sup>	15.1 <sup>±1.2</sup>	15.2 <sup>±0.6</sup>	14.5 <sup>±2.4</sup>	15 <sup>±1.2</sup>	15.2 <sup>±0.9</sup>	20.4 <sup>±1.2</sup>	20.5 <sup>±0.6</sup>	19.7 <sup>±2.4</sup>	20.1 <sup>±1.2</sup>	20.3 <sup>±0.9</sup>
Differential travel - max. (831690/8)	mm	1.2	1.2	0.8	0.4	1.6	0.8	0.6	0.8	0.4	1.6	0.8	0.6

Part numbers for standard actuators		70507528		79218651	
Actuators	Dummy roller 161F R22.2	Dummy roller 161G R21.8			
					
Fixing position	A	B	A	B	
Operating force - max.	N	1.5	2.6	1.5	2.6
Release force - min.	N	0.25	0.5	0.25	0.5
Operating position	mm	19.8 <sup>±2.2</sup>	20.2 <sup>±1.1</sup>	20.8 <sup>±2.2</sup>	21.2 <sup>±1.1</sup>
Differential travel max. (831690/8)	mm	1.6	0.8	1.6	0.8

Unless mentioned specifically, 161-type levers are supplied unassembled.

For factory mounting, specify mounting position A, B or C.

\* 139-type levers are factory mounted.

Note: We recommend greasing the switch button lightly when fitting actuators.

### V3S-83169 microswitches with referenced actuators

Actuators	161A R14.2		161A R25.4			161E R13.6		161E R24.1			139EX R28.7
	79215740		70507524			79215742		70507529			
	Pos A	Pos B	Pos A	Pos B	Pos C	Pos A	Pos B	Pos A	Pos B	Pos C	Pos D
831690   D0.5	83169003	83169004	83169005	83169006	83169007	83169008	83169009	83169010	83169011	83169012	83169017
831698   D0.5	●	●	●	●	●	●	83169819	●	●	●	83169818

## Installation recommendations

See "Basic technical concepts"

## How to order

Use the 8 digit part numbers when they are defined

Other cases, precise: Type of microswitch - Function - Connection - UL approval\* - Actuator\* - Fixing position\* - Adaptation\*

\* if needed

Example: 831690 R D1.50 UL 161E R24.1 B

Standard product

Product made to order



Contact us

Examples of special adaptations



Long overtravel variant with plastic plunger and reinforced housing (SP4988)



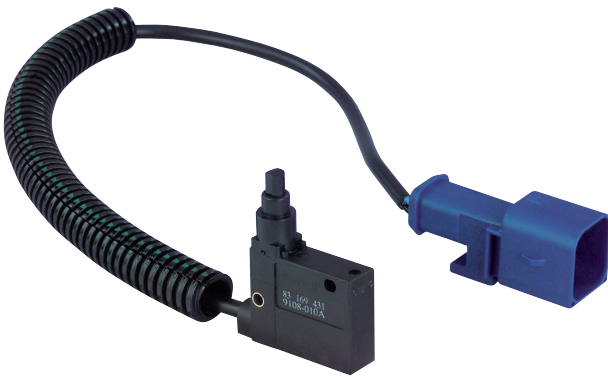
Long overtravel variant with metal plunger (SP4978)



Adjustable fixing by threaded barrel and telescopic plunger: see 83581



Double insulation model with plastic plunger (SP4965)



Full wiring with custom connector