

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_{DC} to 8 A 250 V_{AC} and 1/4 HP 125-250 V_{AC}
- › 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
Function	Connections				
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					
Electrical characteristics					
Rating nominal / 250 V AC (A)		8	5	5**	5**
Rating thermal / 250 V AC (A)		10	6	6	6
Mechanical characteristics					
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 ⁶	5 x 10 ⁶	5 x 10 ⁶	5 x 10 ⁶
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

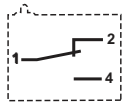
Standard product

Product made to order

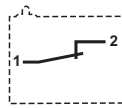
● Contact us

Principles

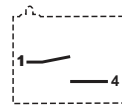
Single break snap-action switch
Changeover - SPDT (form C)



Normally closed - SPST-NC (form B)

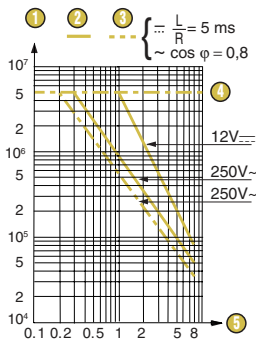


Normally open - SPST-NO (form A)

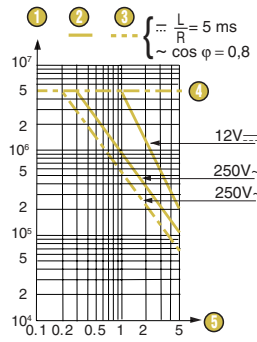


Curves

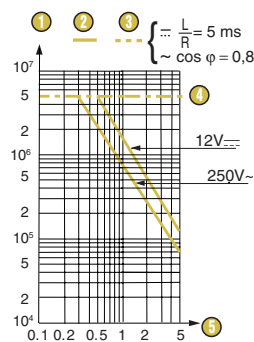
Operating curve for type 831690



Operating curve for type 831694



Operating curve for types 831698/831699



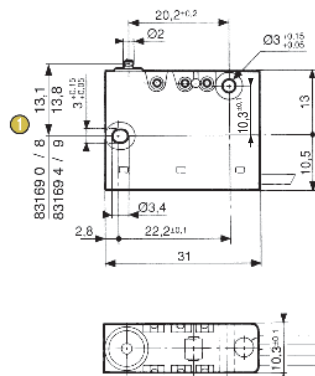
- 1 Number of cycles
- 2 Resistive circuit
- 3 Inductive circuit
- 4 Mechanical life limit
- 5 Current in Amps

** 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

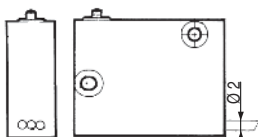
83169



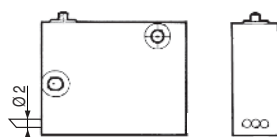
1 Total travel position

Connections

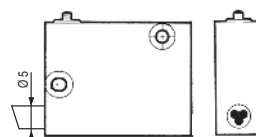
D wire output on right



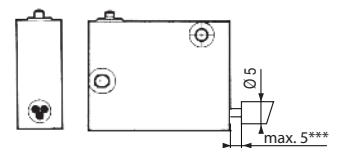
G wire output on left



C cable output on left



Y cable output on right



***Outer jacket stripping

Wire characteristics:

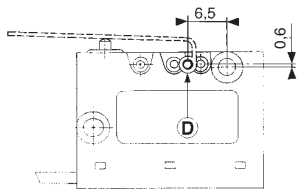
- 1: black (common)
- 2: brown (NC)
- 4: blue (NO)
- Cross section: 1 mm²
- Standard length: 0.5 m (other lengths on request)

Cable characteristics:

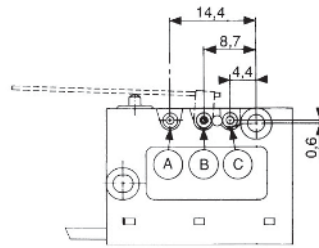
- 1: black (common)
- 2: brown (NC)
- 4: grey (NO)
- Cross section: 3 x 0.75 or 2 x 0.75 mm²
- Standard length: 0.5 m (other lengths on request)

Actuator mounting positions

139-type levers (pinned)

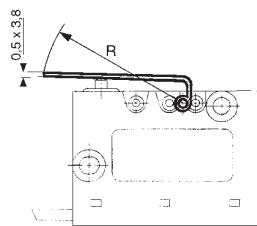


161-type levers (clipped-on)

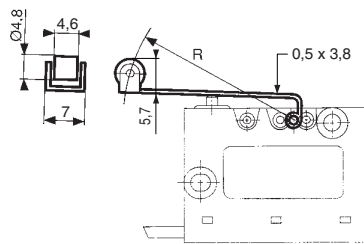


Actuators

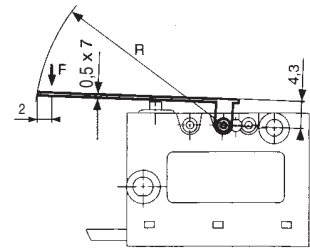
139AX flat



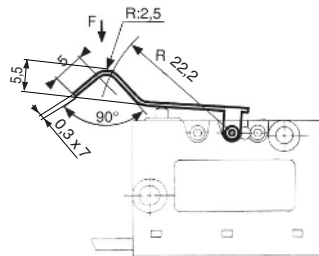
139EX roller



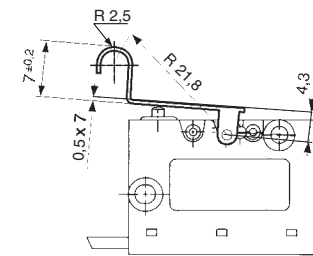
161A flat



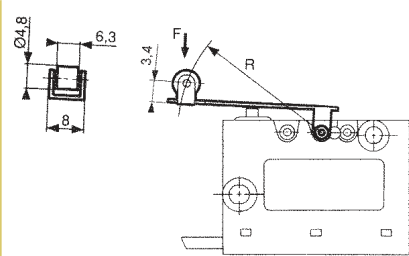
161F dummy roller



161G dummy roller

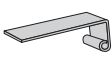
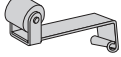






161E roller



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	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	1	0.25	0.5	0.6	0.5	1	0.25	0.5	0.6	
Operating position	mm	14.3 ^{±1.2}	19.4 ^{±1.3}	15.1 ^{±1.2}	15.2 ^{±0.6}	14.5 ^{±2.4}	15 ^{±1.2}	15.2 ^{±0.9}	20.4 ^{±1.2}	20.5 ^{±0.6}	19.7 ^{±2.4}	20.1 ^{±1.2}	20.3 ^{±0.9}
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 ^{±2.2}	20.2 ^{±1.1}	20.8 ^{±2.2}	21.2 ^{±1.1}
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

Examples of special adaptations



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



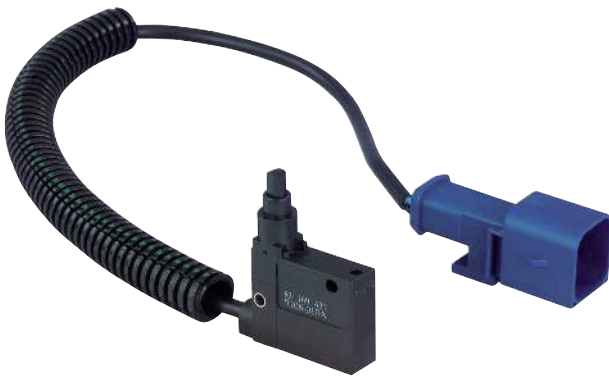
Long overtravel variant with metal plunger (SP4978)



Adjustable fixing by threaded barrel and telescopic plunger: see 83581



Double insulation model with plastic plunger (SP4965)



Full wiring with custom connector