

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 $\overline{\sim}$ to 8 A 250 V \sim and 1/4 hp 125-250 V \sim
- › 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 (wires, right) | 83169002 | 83169405 | 83169802 | 83169905 |
| I (changeover) | G0.5 (wires, left) | 83169001 | 83169404 | 83169801 | 83169904 |
| I (changeover) | C0.5 (cable, left) | 83169015 | 83169406 | 83169803 | 83169906 |
| I (changeover) | Y0.5 (cable, right) | 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 | -40 → +105 | -40 → +105 | -40 → +105 |
| Ambient operating temperature-cable (°C) | | -40 → +90 | -40 → +90 | -40 → +90 | -40 → +90 |
| 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
- Conformity / Certifications: on request /

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)
- › AgSnO2 contacts for very high inrush currents (lamp and capacitive loads)
- › Integrated varistor for extended service life on DC inductive load
- › cURus approved versions

Standard product

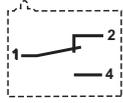
Product made to order



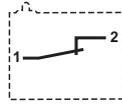
Contact us

Principles

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



Normally closed - SPST-NC (form B)

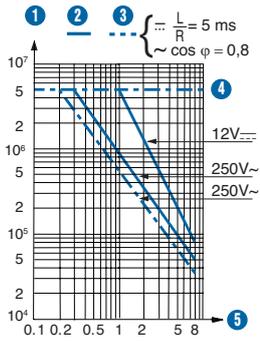


Normally open - SPST-NO (form A)

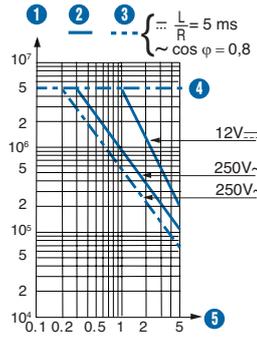


Curves

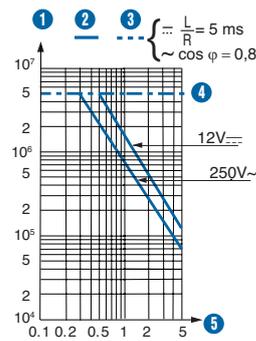
Operating curve for type 831690



Operating curve for type 831694



Operating curve for types 831698/831699



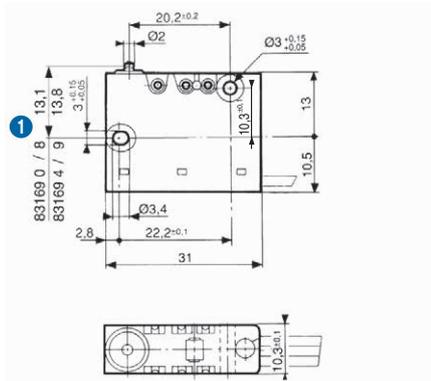
- 1 Number of cycles
- 2 Resistive circuit
- 3 Inductive circuit
- 4 Mechanical life limit
- 5 Current in Amps

** 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

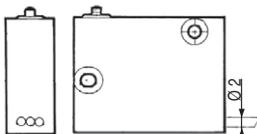
83169



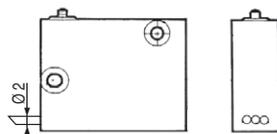
1 Total travel position

Connections

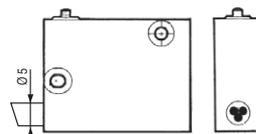
D wire output on right



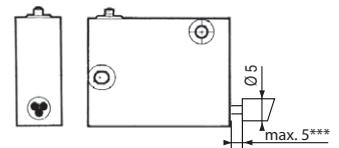
G wire output on left



C cable output on left



Y cable output on right



***Outer jacket stripping

Wire characteristics:

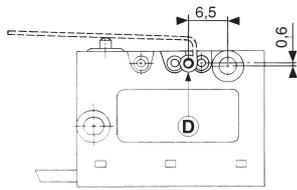
- 1: Black (common)
- 2: Brown (NC)
- 4: Blue (NO)
- Cross section: 1 mm²
- Standard length: 0.5 m
- Other lengths on request (length in meters: e.g. 1.5)

Cable characteristics:

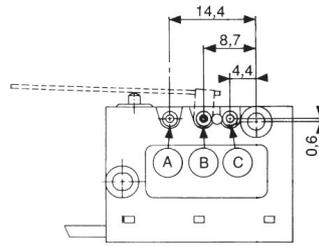
- 1: Black (common) 2: Brown (NC) 4: Grey (NO)
- except NC or NO versions: Black - Red
- Cross section: 3 x 0.75 or 2 x 0.75 mm²
- Standard length: 0.5 m
- Other lengths on request (length in meters: e.g. 1.5)

Actuator mounting positions

139-type levers (pinned)

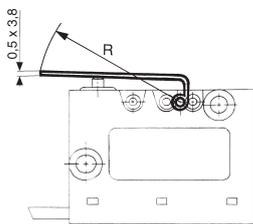


161-type levers (clipped-on)

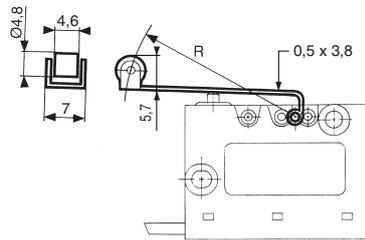


Actuators

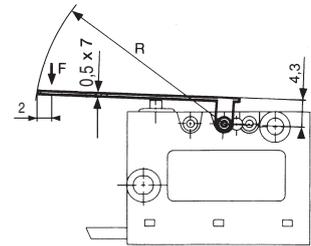
139AX flat



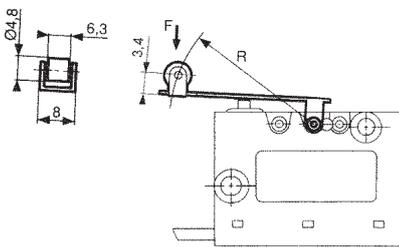
139EX roller



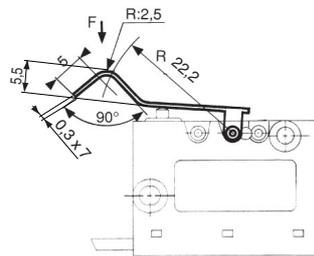
161A flat



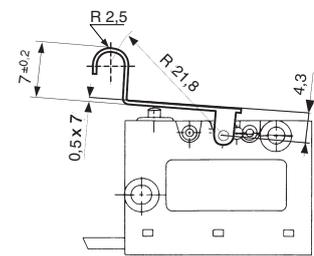
161E roller



161F dummy roller

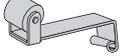


161G dummy roller



Other shapes and dimensions: consult us

Actuators and mounting accessories

| Part numbers for standard actuators | | 79211671* | 79211674* | 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 | |
| Operating force - max. | N | 2.5 | 2.5 | 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 |
| 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} |
| Differential travel - max. (831690/8) | mm | 1.2 | 1.2 | 0.8 | 0.4 | 1.8 | 0.9 | 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 unmounted.
For factory mounting, specify mounting position A, B or C. See preferred part numbers in table below.

* 139-type levers are preferably factory mounted. See preferred part numbers in table below.
For unmounted supply, please also order associated pin [79210424](#)

Note: We recommend greasing the switch button lightly when fitting actuators, excluding greases containing silicone.

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 | | | 79211674 |
| | 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 D1.5 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

Warning:

The product information contained in this catalogue is given purely as information and does not constitute a representation, warranty or any form of contractual commitment. Crouzet and its subsidiaries reserve the right to modify their products without notice. It is imperative that we should be consulted over any particular use or application of our products and it is the responsibility of the buyer to establish, particularly through all the appropriate tests, that the product is suitable for the use or application. Under no circumstances will our warranty apply, nor shall we be held responsible for any application (such as any modification, addition, deletion, use in conjunction with other electrical or electronic components, circuits or assemblies, or any other unsuitable material or substance) which has not been expressly agreed by us prior to the sale of our products.