

Miniature

→ V3

- Nominal ratings 0.1 A to 20 A/250 VAC
- Operating temperature up to +125°C
- Conforming to EN 61058 and UL 1054
- Choice of actuators with 4 possible fixing positions



Main specifications

		High release force 83 161 1	High-current 83 161 2
Function	Connections		
I (changeover)	W2	83 161 102	●
I (changeover)	W3	83 161 118	●
I (changeover)	W6A5*	83 161 110	●
I (Changeover)	W3R5* - W5 - W6D8* - W7A5 - 2W7A8*	●	●
R (Normally closed)	W2 - W3 - W3R5* - W5 - W6A5* - W6D8* - W7A5 - 2W7A8*	●	●
C (Normally open)	W2 - W3 - W3R5* - W5 - W6A5* - W6D8* - W7A5 - 2W7A8*	●	●
Electrical characteristics			
Rating nominal / 250 V AC (A)		16	20
Rating thermal / 250 V AC (A)		20	22
Mechanical characteristics			
Maximum operating force (N)		3	1
Min. Release force (N)		1	0.2
Maximum total travel force (N)		4.5	2.5
Max. permitted overtravel force (N)		20	20
Maximum rest position (mm)		16.1	16.1
Tripping point (mm)		14.7 ^{±0.4}	14.7 ^{±0.4}
Maximum differential travel (mm)		0.35	0.35
Min. overtravel CRA (mm)		1.1	1.1
Ambient operating temperature (°C)		-20 → +125	-20 → +125
Mechanical life for 2/3 CRA (operations)		10 ⁷	2.5 x 10 ⁵
Contact gap (mm)		0.4	0.4
Weight (g)		5.6	5.6
Comments			

* for 83 161 6 : W6A5 - W6D8 - W3R5 - 2W7A8 : please consult us

Additional specifications

Components

Material

- Housings : polyamide or polyester
- Button : polyamide
- Contacts : AgNi

Levers

- Flat : stainless steel
- Roller : stainless steel, glass-filled polyamide roller
- Other polyamides

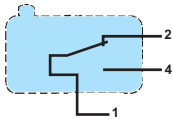
Approvals : NF



- Special levers
- Special connections
- Specific fixing
- High operating temperature
- Special operating force
- Approvals : UL - cUL

Principles

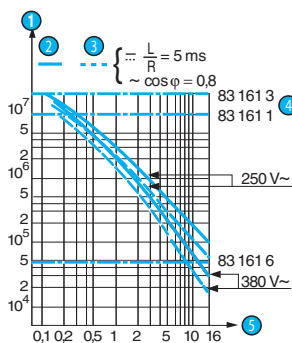
Single break changeover switch



Standard 83 161 3	Low force 83 161 4	Very low force 83 161 5	Very low force 83 161 5 SP 4136	Wide contact gap 83 161 6
83 161 301	•	83 161 502	•	•
83 161 338	•	83 161 501	•	•
83 161 304	•	83 161 503	•	•
•	•	•	•	•
•	•	•	•	•
•	•	•	•	•
16	10	4	4	12
20	12	5	5	15
0.8	0.5	0.25	0.15	5
0.2	0.1	0.05	0.04	0.5
2	1.5	0.40	0.2	6
20	20	20	20	20
16.2	16.2	16.3	16.3	16.1
14.7 ± 0.3	14.7 ± 0.4	14.7 ± 0.4	14.7 ± 0.3	14.5 ± 0.4
0.35	0.35	0.35	0.35	0.8
1.2	1.2	1.1	1.2	0.9
-20 $\rightarrow$ +125	-20 $\rightarrow$ +125	-20 $\rightarrow$ +125	-20 $\rightarrow$ +125	-20 $\rightarrow$ +125
2 x 10 ⁷	3 x 10 ⁷	5 x 10 ⁷	5 x 10 ⁷	5 x 10 ⁴
0.4	0.4	0.4	0.4	3.2
5.6	5.6	5.6	5.6	5.6

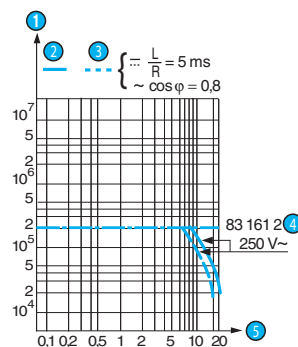
Curves

Operating curve for types
83 161 1 / 83 161 3 / 83 161 6



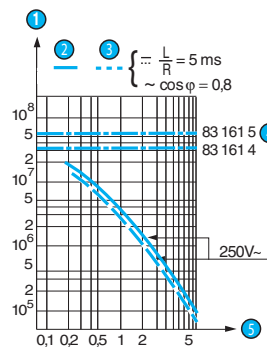
- ① Number of cycles
- ② Resistive circuit
- ③ Inductive circuit
- ④ Mechanical life limit
- ⑤ Current in Amps

Operating curve for type 83 161 2



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

Operating curve for types 83 161 4 / 83 161 5 / 83 161 5 SP 4136

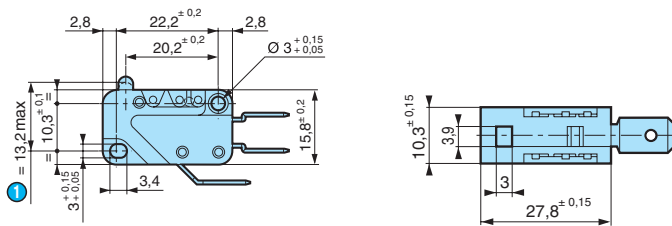


- ① Number of cycles
- ② Resistive circuit
- ③ Inductive circuit
- ④ Mechanical life limit
- ⑤ Current in Amps

Dimensions

→ Product

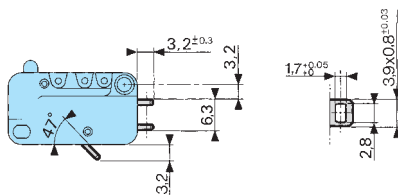
83 161



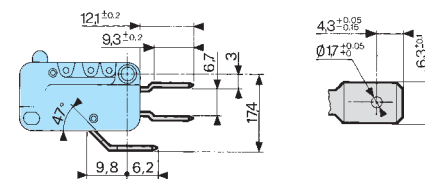
1 OL

→ Connections

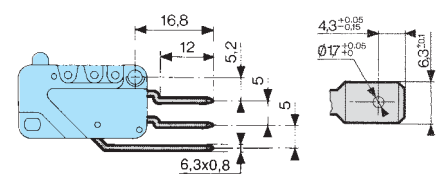
W2 solder



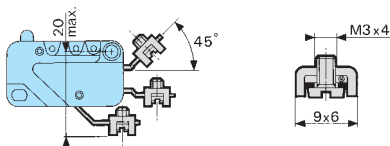
W3 for 6.35 mm clips (6.3 x 0.8)



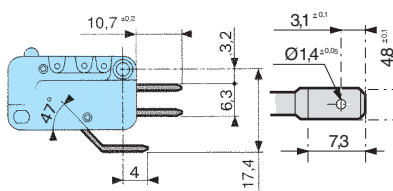
W3R5 for 6.35 mm clips (6.3 x 0.8)



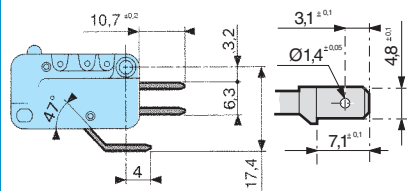
W5 screw



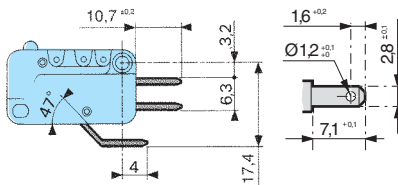
W6A5 for 4.8 mm clips (4.8 x 0.5)



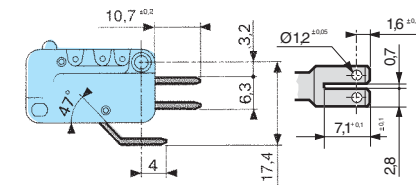
W6D8 for 4.8 mm clips (4.8 x 0.8)



W7A5 for 2.8 mm clips (2.8 x 0.5)

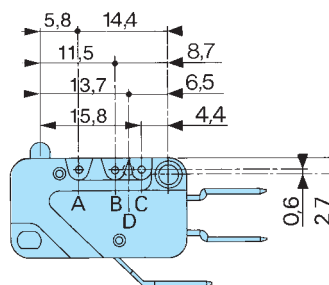
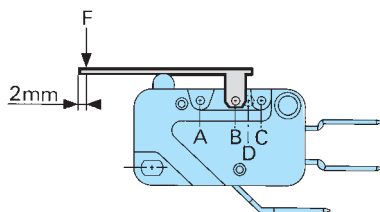


2W7A8 for 2.8 mm clips (2.8 x 0.8)



→ Actuator mounting positions

Levers



To calculate force

Divide the switch force by the coefficient given in the table.

To calculate travel

Multiply the switch travel by the same coefficient.

Example :

83 161 3 with lever 161 A - R 25.4 position A

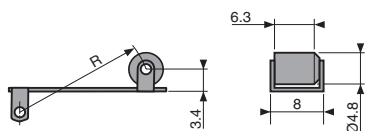
(coeff. 4)

Operating force : 0.8 : 4 = 0.2 N

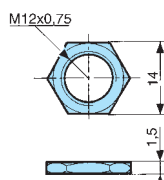
Pre-travel : 1.4 x 4 = 5.6 mm

→ Actuators

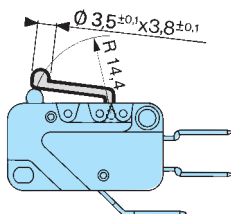
161 E



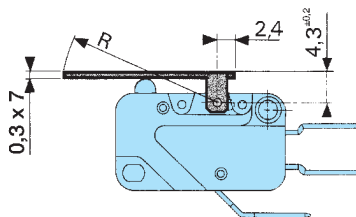
Nut 70 602 118



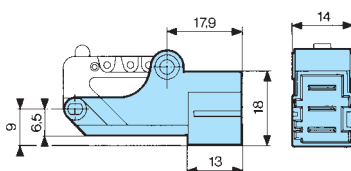
161 V



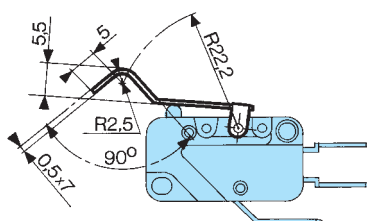
161 A



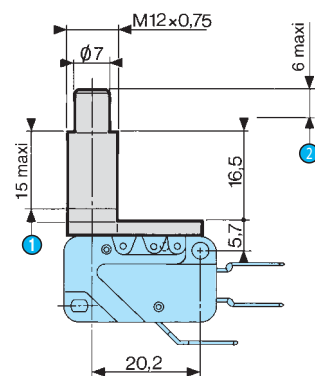
Housing 161 J for connections W3 R5



161 F



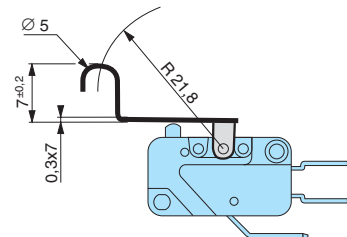
161 L



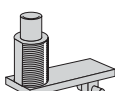
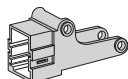
- ① Thread
- ② Total travel

Nut thickness	Max. torque
1,5 mm	5 Cm N
2 mm	7 Cm N
2,5 mm	10 Cm N

161 G



Actuators and fixing positions

Part numbers for standard actuators		79 215 740	70 507 524	79 215 742	79 507 529	79 507 528
Actuators		Plain 161A R14,2	Plain 161A R25,4	Roller 161E R13,6	Roller 161E R24,1	Dummy roller 161F R22,2
						
Fixing positions	A	B	A	B	A	B
Coefficient	2	1	4	2	4	3
Tripping point (except 83 161 6)	15,2 ±1	15,2 ±0,45	15,2 ±25	15,2 ±1	20,5 ±1,5	20,5 ±0,8
Tripping point 83 161 6	14,8 ±1	15 ±0,45	14,4 ±25	14,8 ±1	20,1 ±1,5	20,3 ±0,8
	19,7 ±29	20,1 ±1,5	20,2 ±1,2	20,4 ±2	20,4 ±0,7	
Part numbers for standard actuators		79 218 651				
Actuators		Dummy roller 161G R21,8	**Telescopic plunger 161 L	Manual action 161V	Housing 161J	Nut for 161L Part no.: 70 602 118
						
Fixing positions	A	B	D	D		
Coefficient	3	1,8	1	1		
Tripping point (except 83 161 6)	21,7 ±2	21,7 ±0,7	21,5 ±1	18,35 ±0,45		
Tripping point 83 161 6	21,5 ±2	21,5 ±0,7	21,5 ±1			

Except where otherwise indicated, plain and roller levers are supplied unmounted.

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

** For 83 161 1, 83 161 2, 83 161 3, 83 161 6 mounted in factory (supplied without nut)

Other information

Mounting - Operation

See basic technical concepts

Miniature

→ V3 Dual-current

- Minimum rating 1 mA/4 VDC
- Operating temperature up to +125°C
- Conforming to EN 61058 and UL 1054
- Choice of actuators with 4 possible fixing positions



Main specifications

		Dual-current 83 161 8	Dual-current very low force 83 161 9	Ultra light dual-current 83 161 9 SP 4136
Function	Connections			
I (Changeover)	W2	83 161 801	●	●
I (Changeover)	W3	83 161 806	●	●
I (Changeover)	W6A5	83 161 812	●	●
I (Changeover)	W3R5 - W5 - W6D8 - W7A5 - 2W7A8	●	●	●
R (Normally closed)	W2 - W3 - W3R5 - W5 - W6A5 - W6D8 - W7A5 - 2W7A8	●	●	●
C (Normally open)	W2 - W3 - W3R5 - W5 - W6A5 - W6D8 - W7A5 - 2W7A8	●	●	●
Electrical characteristics				
Rating nominal / 250 V AC (A)		0.1	0.1	0.1
Rating thermal / 250 V AC (A)		6	6	5
Mechanical characteristics				
Maximum operating force (N)		0.8	0.25	0.15
Min. Release force (N)		0.2	0.05	0.04
Maximum total travel force (N)		2	0.40	0.2
Max. permitted overtravel force (N)		20	20	20
Maximum rest position (mm)		16.2	16.3	16.3
Tripping point (mm)		14.7 ^{±0.3}	14.7 ^{±0.4}	14.7 ^{±0.3}
Maximum differential travel (mm)		0.35	0.35	0.35
Min. overtravel CRA (mm)		1.2	1.1	1.2
Ambient operating temperature (°C)		-20 → +125	-20 → + 125	-20 → +125
Mechanical life for 2/3 CRA (operations)		2 x 10 ⁷	5 x 10 ⁷	5 x 10 ⁷
Contact gap (mm)		0.4	0.4	0.4
Weight (g)		5.6	5.6	5.6

Additional specifications

Components

Material

- Housings : polyamide or polyester
- Button : polyamide
- Contacts : gold alloy

Levers

- Flat : stainless steel
- Roller : stainless steel, glass-filled polyamide roller
- Other polyamides

Approvals : NF

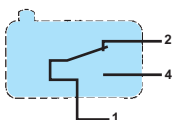
Product adaptations



- Special levers
- Special connections
- Specific fixing
- High operating temperature
- Special operating force
- Approvals : UL - cUL

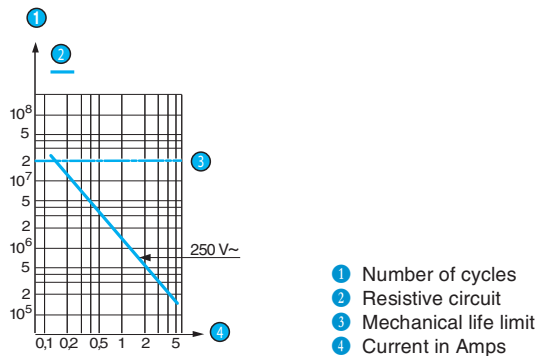
Principles

Single break changeover switch



Curves

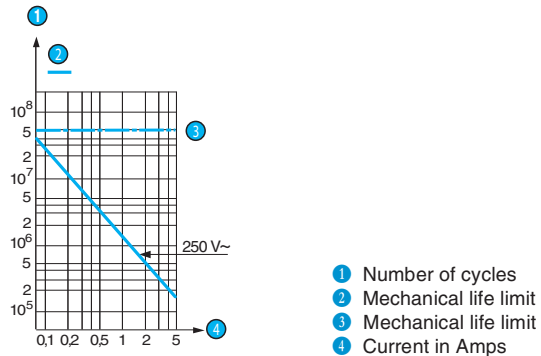
Operating curve for type 83 161 8



For types 83 161 8 - 9 and 9 SP 4136 Dual-current

These models are designed to operate equally well on dual-current (1 mA 4 V minimum) 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.

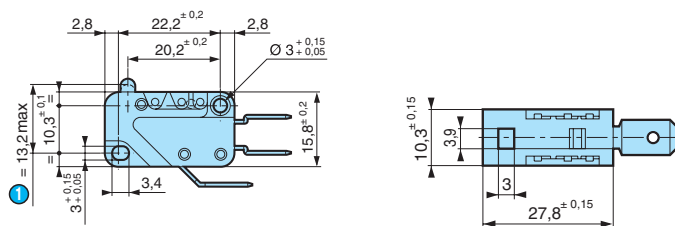
Operating curve for types 83 161 9 and 83 161 9 SP 4136



Dimensions

→ Product

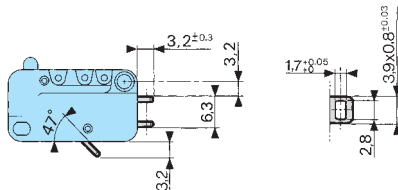
83 161



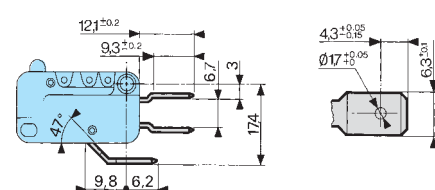
1 OL

→ Connections

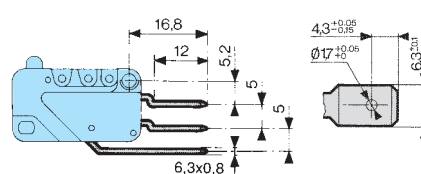
W2 solder



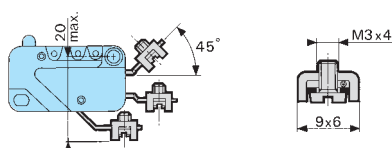
W3 (6.3 x 0.8) for 6.35 mm clips



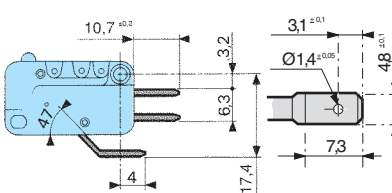
W3R5 (6.3 x 0.8) for 6.35 mm clips



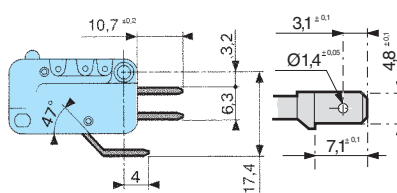
W5 screw



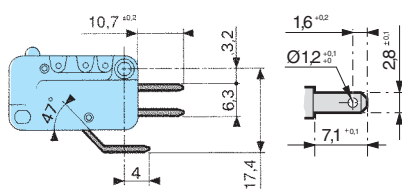
W6A5 (4.8 x 0.5) for 4.8 mm clips



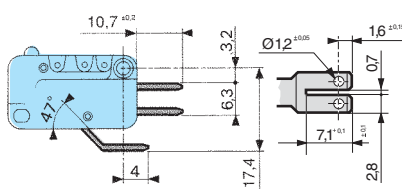
W6D8 (4.8 x 0.8) for 4.8 mm clips



W7A5 (2.8 x 0.5) for 2.8 mm clips

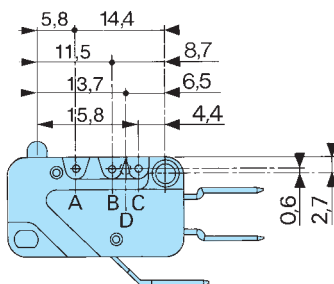
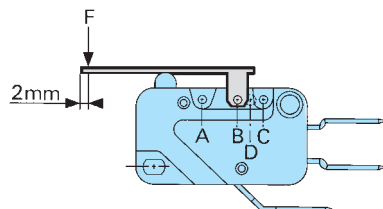


2W7A8 2 x (2.8 x 0.8) for 2.8 mm clips



→ Actuator mounting positions

Levers



To calculate force

Divide the switch force by the coefficient given in the table.

To calculate travel

Multiply the switch travel by the same coefficient.

Example :

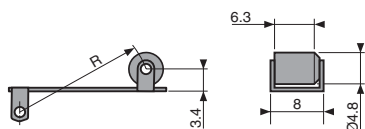
83 161 8 with lever 161 A - R 25.4 position A (coeff. 4)

Operating force : $0.8 : 4 = 0.2 \text{ N}$

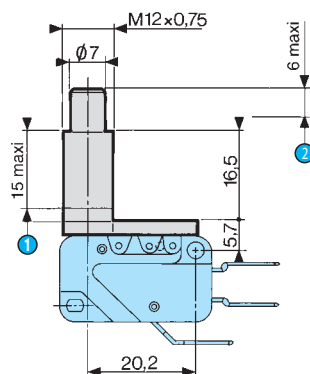
Pre-travel : $1.4 \times 4 = 5.6 \text{ mm}$

→ Actuators

161 E



161 L

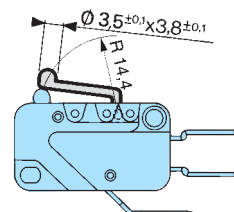


① Thread

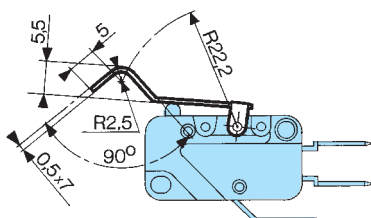
② Total travel

Nut thickness	Max. torque
1,5 mm	5 Cm N
2 mm	7 Cm N
2,5 mm	10 Cm N

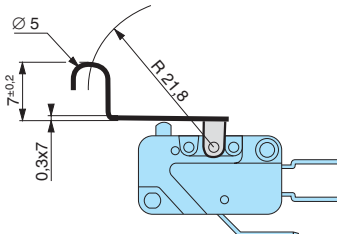
161 V



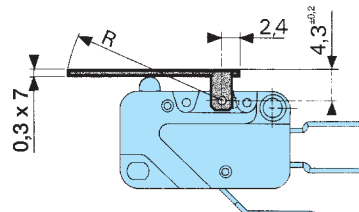
161 F



161 G

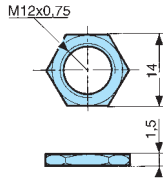


161 A

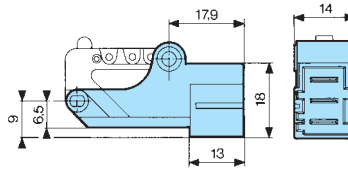


→ Mounting accessories

Nut 70 602 118



Housing 161 J for connections W3 R5



Actuators and fixing positions

Part numbers for standard actuators	79 215 740		70 507 524			79 215 742		79 507 529			79 507 528	
Actuators	Plain 161A R14,2		Plain 161A R25,4			Roller 161E R13,6		Roller 161E R24,1			Dummy roller 161F R22,2	
												
Fixing positions	A	B	A	B	C	A	B	A	B	C	A	B
Coefficient	2	1	4	2	1,5	2	1	4	2	1,5	3	1,8
Tripping point (except 83 161 6)	15,2 ±1	15,2 ±0,45	15,2 ±2,5	15,2 ±1	15,2 ±0,8	20,5 ±1,5	20,5 ±0,8	20,5 ±2,9	20,5 ±1,5	20,5 ±1,2	20,4 ±2	20,4 ±0,7
Tripping point 83 161 6	14,8 ±1	15 ±0,45	14,4 ±2,5	14,8 ±1	14,9 ±0,8	20,1 ±1,5	20,3 ±0,8	19,7 ±2,9	20,1 ±1,5	20,2 ±1,2	20,2 ±2	20,2 ±2

Part numbers for standard actuators	79 218 651					
Actuators	Dummy roller 161G R21,8	**Telescopic plunger 161 L	Manual action	161V	Housing 161J	Nut for 161L Part no.: 70 602 118
Fixing positions	A	B	D	D		
Coefficient	3	1,8	1	1		
Tripping point (except 83 161 6)	21,7 ±2	21,7 ±0,7	21,5 ±1	18,35 ±0,45		
Tripping point 83 161 6	21,5 ±2	21,5 ±0,7	21,5 ±1			

Except where otherwise indicated, plain and roller levers are supplied unmounted.

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

** For 83 161 1, 83 161 2, 83 161 3, 83 161 6 mounted in factory (supplied without nut)

Other information

Mounting - Operation

See basic technical concepts

MINIATURE MICROSWITCHES - PREMIUM

V3 - 83161

- High precision flexible leaf snap-action mechanism
- Operation without balance-point, even at extremely slow actuating speed
- Broad range of operating forces from 0.15 N to 5 N
- Ratings from 4 A to 20(8) A 250 V~, 10(4) A 400 V~ and 1/2 hp 125-250 V~
- Contact gap less or greater than 3 mm (micro-disconnection (μ) or full disconnection)
- Operating temperature from -60 °C up to +150 °C - High resistance to shock and vibration
- Mechanical life up to 50 million cycles
- ENEC and cURus approved
- Wide choice of actuators on 4 possible fixing positions (pre-assembled or retrofittable)



Main specifications

		Standard 831613		High current 831612		
		Standard	UL	Standard	UL	UL SP4186
Function	Connections					
I (changeover)	W2 (solder)	83161301	83161348	●	83161273	●
I (changeover)	W3 (QC 6.3x0.8)	83161338	83161344	83161241	83161244	●
I (changeover)	W6A5 (QC 4.8x0.5)	83161304	83161343	●*	●*	-
I (changeover)	W3R5 (QC 6.3x0.8, Rast 5)	83163023	83163107	●*	●*	●*
I (changeover)	W5 (screw + clamp)	83161303	83161349	●*	●*	-
I (changeover)	W6D8 (QC 4.8x0.8)	83161305	83161341	●*	●*	-
I (changeover)	W7A5 (QC 4.8x0.5)	83161309	83161350	-	-	-
I (changeover)	2W7A8 (QC 2.8x0.8, double)	83161310	●	●*	●*	-
R (normally closed)	W2 (solder)	83161316	83163041	●	83161274	●
R (normally closed)	W3 (QC 6.3x0.8)	83161311	83163066	●	●	●
R (normally closed)	W6A5 (QC 4.8x0.5)	83161359	●	●*	●*	-
R (normally closed)	W3R5 - W5 - W6D8 - W7A5 - 2W7A8	●	●	●*	●*	●*
C (normally open)	W2 (solder)	83161315	●	●	●	●
C (normally open)	W3 (QC 6.3x0.8)	83161312	83161346	●	●	●
C (normally open)	W6A5 (QC 4.8x0.5)	83161325	●	●*	●*	-
C (normally open)	W3R5 - W5 - W6D8 - W7A5 - 2W7A8	●	●	●*	●*	●*
Electrical characteristics						
Rating nominal / 250 V AC (A)		16		20		
Rating thermal / 250 V AC (A)		20		22		
Rating ENEC/NF / 250 V AC (A)		16(4)	16(4)	20(8)	20(8)	20(8)
Rating UL / 125/250 V AC (A)		-	16 - 1/2hp	-	15.1 - 1/2hp	20.1 - 1/2hp
Mechanical characteristics						
Maximum operating force (N)		0.8		1**		
Min. Release force (N)		0.2		0.2		
Maximum total travel force (N)		2		2.5		
Max. Allowable overtravel force (N)		20		20		
Maximum rest position (mm)		16.2		16.1		
Operating position (mm)		14.7±0.3		14.7±0.4		
Maximum differential travel (mm)		0.35		0.35		
Min. overtravel (mm)		1.2		1.1		
Ambient operating temperature (°C)		-60 → +125		-60 → +125		
Mechanical life for 2/3 OT (operations)		2 x 10 ⁷		2.5 x 10 ⁵		
Contact gap (mm)		0.4		0.4		
Weight (g)		5.6		5.6		

* Please consult us

** Also available with 3N operating force (831612 SP4165)

Additional specifications

- Case: PA6 GF (UL 94-V2 / GWFI 960 °C) - Standard versions
- PBT GF (UL 94-V0 / GWFI 960 °C) - UL versions
- PET GF (UL 94-V0 / GWFI 960 °C / GWIT 775 °C) - On request
- Button: PA66
- Moving blade: silver-plated beryllium copper
- Contacts: silver alloy, micro-profile (831612: silver cadmium oxyde)
- Terminals: brass (except W2 : copper nickel)
- Levers: stainless steel or polyamide, polyamide roller
- Nuts for 161L: nickel-plated brass

- Degree of protection: IP40 (mechanism)
- Proof tracking index: PTI 250
- Protection against electric shock: button and 161-type actuators have reinforced insulation for Ui 250V / Uimp 2,5kV / pollution 2
- Recommended min actuating speed: 0.001 mm/s

- Certification marks: Standard versions:
- UL versions:

Standard product

Product made to order



Contact us



Main specifications (continued)

High force 831611		Low force 831614		Very low force 831615		Ultra low force 831615 SP4136		Wide contact gap 831616		Func.	Conn.
Standard	UL	Standard	UL	Standard	UL	Standard	UL	Standard	UL		
83161102	83161058	83161402	83161431	83161502	●	83161520	●	83161601	●	I	W2
83161118	83161165	83161401	●	83161501	83161513	83161519	83161573	83161602	83161636	I	W3
83161110	83161182	83161403	83161407	83161503	83161508	●	83161577	●*	●*	I	W6A5
●	●	●	●	83161516	83161518	●	83161575	83161619	●	I	W3R5
83161113	83161055	●	83161408	83161509	83161511	●	●	83161603	●	I	W5
83161123	●	●	83161429	83161507	●	●	●	●	●	I	W6D8
83161189	●	83161405	●	●	●	●	●	●*	●*	I	W7A5
83161059	●	●	●	●	●	●	●	●*	●*	I	2W7A8
83161117	●	●	●	83161595	●	●	●	83161609	●	R	W2
83161109	●	●	●	83161528	●	●	●	83161605	●	R	W3
83161070	●	83161424	●	●	●	●	●	●*	●*	R	W6A5
●	●	●	●	●	●	●	●	●*	●*	R	Others
83161104	83161082	●	83161435	●	●	83161589	●	●	●	C	W2
83161103	83161188	83161404	83161412	●	●	●	●	83161606	●	C	W3
83161125	83161111	●	●	83161504	●	●	●	●*	●*	C	W6A5
●	●	●	●	●	●	●	●	●*	●*	C	Others
										Electrical	
16		10		4		4		12		Nom rating (A)	
20		12		5		5		15		Therm rating (A)	
16(4)	16(4)	10(3)	10(3)	4(1)	4(1)	4(1)	4(1)	12(3)	12(3)	ENEC rating (A)	
-	16 - 1/2hp	-	6 - 1/4hp	-	4 - 1/10hp	-	4 - 1/10hp	-	6.1 - 1/3hp	UL rating (A)	
										Mechanical	
3		0.5		0.25		0.15		5		OF max (N)	
1		0.1		0.05		0.04		0.5		RF min (N)	
4.5		1.5		0.40		0.2		6		TTF max (N)	
20		20		20		20		20		AOF max (N)	
16.1		16.2		16.3		16.3		16.1		RP max (mm)	
14.7±0.4		14.7±0.4		14.7±0.4		14.7±0.3		14.5±0.4		OP (mm)	
0.35		0.35		0.35		0.35		0.8		DT max (mm)	
1.1		1.1		1.1		1.2		0.9		OT min (mm)	
-60 → +125		-60 → +125		-40 → +125		-40 → +125		-60 → +125		Temp (°C)	
10 ⁷		3 x 10 ⁷		5 x 10 ⁷		5 x 10 ⁷		5 x 10 ⁴		Mech. life (op)	
0.4		0.4		0.4		0.4		3.2		Gap (mm)	
5.6		5.6		5.6		5.6		5.6		Weight (g)	

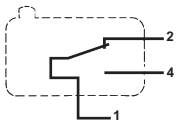
Product adaptations



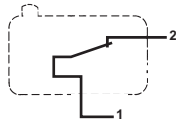
- › Special levers: special shapes and lengths, flexible levers, adjustable, two-pole, pinned,
- › Special connections: angled, with 7mm spacing (RAST 7-W3R7), for PCB, long solder (W2L),...
- › High operating temperature: +150 °C
- › Special contacts (for gold plated contacts: see "V3 Dual-current - 83161")
- › Reduced or increased switching hysteresis: max 0.1 mm to max 0.8 mm differential travel
- › Specific operating force easily achievable
- › Telescopic plunger and adjustable fixing by threaded barrel: plastic version (161L accessory) or metal version (SP9603)
- › Housing material complying with IEC 60335-1 for unattended appliances: GWFI 850° C / GWIT 775° C (SP9680)
- › 400 V~ ENEC approved versions

Principles

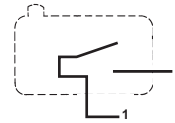
Single break snap-action switch
Changeover - SPDT (form C)



Normally closed - SPST-NC (form B)

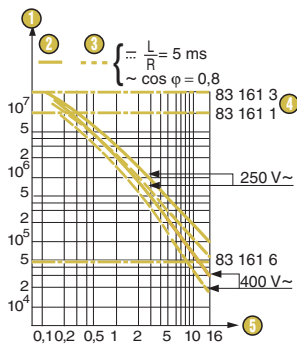


Normally open - SPST-NO (form A)



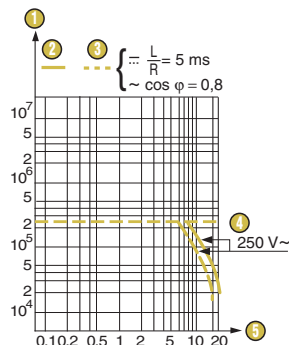
Curves

Operating curve for types
831611* / 831613* / 831616



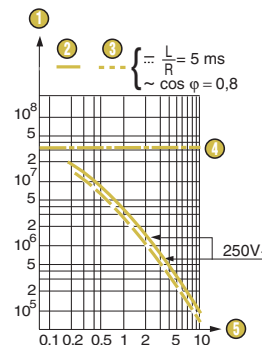
- ① Number of cycles
- ② Resistive circuit
- ③ Inductive circuit
- ④ Mechanical life limit
- ⑤ Current in Amps

Operating curve for type 831612



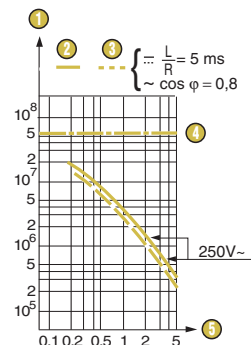
- ① Number of cycles
- ② Resistive circuit
- ③ Inductive circuit
- ④ Mechanical life limit
- ⑤ Current in Amps

Operating curve for type 831614



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

Operating curve for types
831615 / 831615 SP 4136



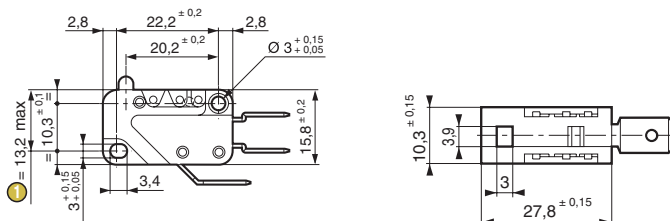
- ① Number of cycles
- ② Resistive circuit
- ③ Inductive circuit
- ④ Mechanical life limit
- ⑤ Current in Amps

* For 831611 UL and 831613 UL: please consult us

Dimensions

Product

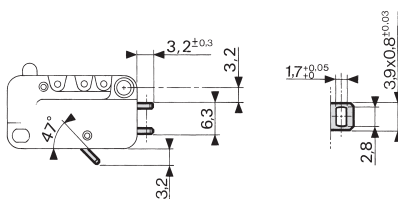
83161



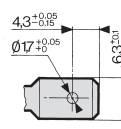
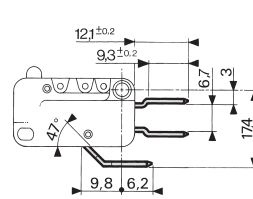
- ① Total travel position

Connections

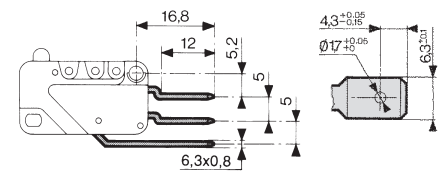
W2 solder

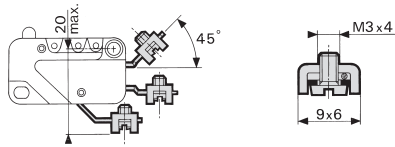
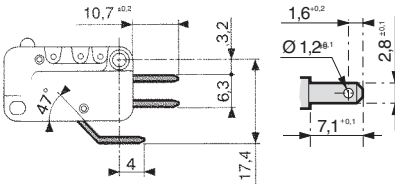
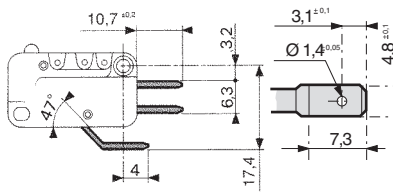
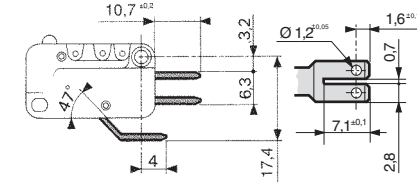
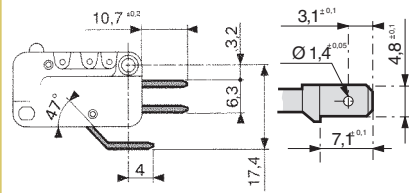
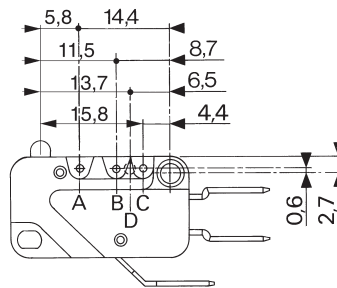
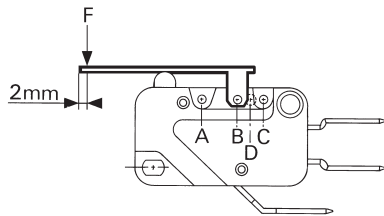


W3 quick-connect 6.3 x 0.8



W3R5 quick-connect 6.3 x 0.8
for RAST 5 connector



W5 screw with clamp**W7A5 quick-connect 2.8 x 0.5****W6A5 quick-connect 4.8 x 0.5****2W7A8 quick-connect 2.8 x 0.8, double****W6D8 quick-connect 4.8 x 0.8****Actuator mounting positions****To calculate force**

Divide the switch force by the coefficient given in the table.

To calculate travel

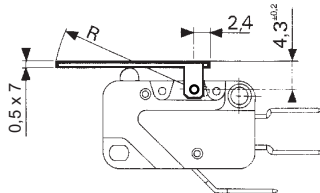
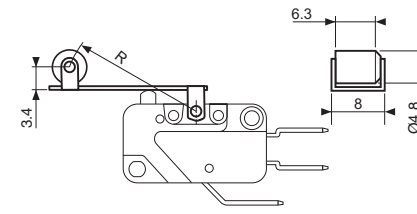
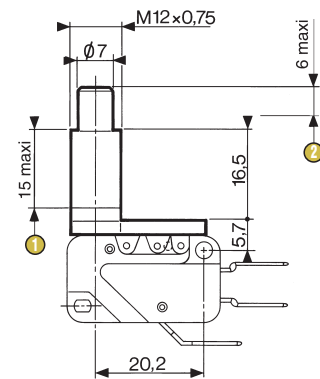
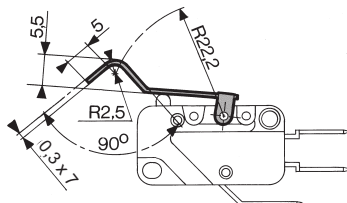
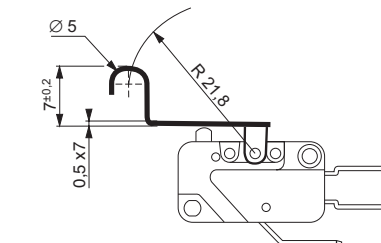
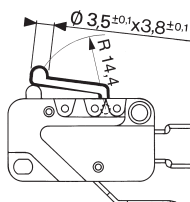
Multiply the switch travel by the same coefficient.

Example :

83 161 3 with lever 161 A - R 25.4 position A (coeff. 4)

Operating force: $0.8 : 4 = 0.2 \text{ N}$

Overtravel: $1.2 \times 4 = 4.8 \text{ mm}$

Actuators**161A flat****161E roller****161L telescopic plunger****161F dummy roller****161G dummy roller****161V plastic**

Other shapes and dimensions: consult us

Also available are pinned actuators mounted on position D (factory mounting), same as for 83160 series. (datasheet: SP9640)

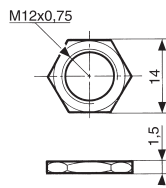
① Thread length

② Total travel

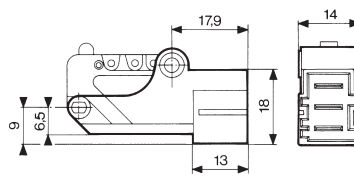
Nut thickness	Max. torque
1,5 mm	0.5 N.m
2 mm	0.7 N.m
2,5 mm	1 N.m

Mounting accessories

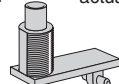
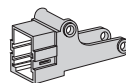
Nut for 161L



Housing 161J for connections W3 R5



Actuators and mounting accessories

Part numbers for standard actuators		79215740	70507524	79215742	70507529	70507528									
Actuators		Flat 161A R14.2	Flat 161A R25.4	Roller 161E R13.6	Roller 161E R24.1	Dummy roller 161F R22.2									
															
Fixing positions		A	B		A	B	C		A	B					
Coefficient		2	1		4	2	1.5		3.6	1.8					
Operating position, except 831616 (mm)		15.2 ±1	15.2 ±0.45		15.2 ±2.5	15.2 ±1	15.2 ±0.8		20.5 ±1.5	20.5 ±0.8	20.5 ±2.9	20.5 ±1.5	20.5 ±1.2	20.4 ±2	20.4 ±0.7
Operating position 831616 (mm)		14.8 ±1	15 ±0.45		15.2 ±2.5	14.8 ±1	14.9 ±0.8		20.1 ±1.5	20.3 ±0.8	19.7 ±2.9	20.1 ±1.5	20.2 ±1.2	20.2 ±2	20.2 ±0.7
Part numbers for standard actuators		79218651	79250338			70602118									
Actuators		Dummy roller 161G R21.8	**Telescopic plunger 161L	Manual actuation	Plastic 161V	Housing 161J	Nut for 161L								
															
Fixing positions		A	B	C	D	D									
Coefficient		3.6	1.8	1.2	1	1									
Operating position, except 831616 (mm)		21.7 ±2	21.7 ±0.7	21.7 ±0.5	21.5 ±1	18.55 ±0.45									
Operating postion 831616 (mm)		21.5 ±2	21.5 ±0.7	21.5 ±0.5	21.5 ±1	18.35 ±0.45									

Except where otherwise indicated, flat and roller levers are supplied unmounted.

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

** For 831611, 831612, 831613, 831616. Mounted in factory (supplied without nut)

V3-83161 microswitches with referenced actuators

Actuators			161A R14.2 79215740		161A R25.4 70507524			161E R13.6 79215742		161E R24.1 70507529			161L
			Pos A	Pos B	Pos A	Pos B	Pos C	Pos A	Pos B	Pos A	Pos B	Pos C	Pos D
831611	I W2	STD	83161020	83161021	83161022	83161023	83161024	83161025	83161026	83161027	83161028	83161029	•
		UL	•	•	•	•	•	•	•	•	•	•	•
	I W3	STD	83161032	83161033	83161034	83161035	83161036	83161037	83161038	83161039	83161040	83161041	83161064
		UL	•	•	•	•	•	•	•	•	•	•	83161098
	I W6A5	STD	83161044	83161045	83161046	83161177	83161047	83161048	83161049	83161050	83161051	83161052	•
		UL	•	•	•	•	•	•	•	•	•	•	•
831613	I W2	STD	83163067	83163068	83163069	83163015	83163071	83163072	83163073	83163074	83163016	83163075	83161320
		UL	•	•	•	•	•	•	•	•	•	•	•
	I W3	STD	83163078	83163079	83163080	83163081	83163082	83163083	83161374	83163084	83163007	83163085	83161318
		UL	•	•	•	83161328	•	•	83163221	•	•	•	831613102
	I W6A5	STD	83163088	83163089	83163090	83163091	83163092	83163093	83163094	83163095	83163096	83163097	•
		UL	•	•	•	83161327	•	•	83163222	•	83163220	•	83161352
831615	I W2	STD	83161529	83161530	83161531	83161532	83161533	83161534	83161535	83161536	83161537	83161538	-
		UL	•	•	•	•	•	•	•	•	•	•	-
	I W3	STD	83161541	83161542	83161543	83161544	83161545	83161546	83161547	83161548	83161514	83161549	-
		UL	•	•	•	•	•	•	•	•	•	•	-
	I W6A5	STD	83161552	83161553	83161554	83161526	83161555	83161556	83161557	83161558	83161559	83161560	-
		UL	•	•	•	•	•	•	•	•	•	•	-
831616	I W3	STD	•	•	•	•	•	•	•	•	•	•	83161615
		UL	•	•	•	•	•	•	•	•	•	•	•

Standard product

Product made to order



Contact us

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* + Mounting accessories*
* if needed

Example: 831613 C W3R5 UL 161E R13.6 B SP9680 + 79250338

Examples of special adaptations



Telescopic plunger and adjustable fixing . 4mm overtravel. Metal version for heavy duty (SP9603)



Door switch for industrial vehicle



Angled W3 terminals



RAST 7mm - W3R7 connections



Long solder terminals (W2L)



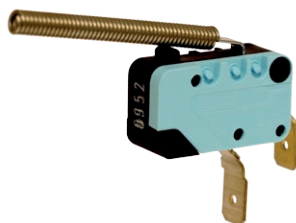
One-way roller lever (active on right, idle-return on left)



Lever fitted with POM ramp for transverse actuation



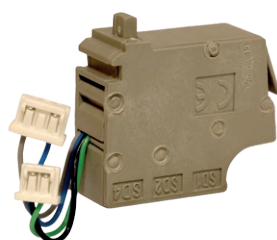
Two-pole lever



Spring lever for extra-long overtravel



Fully specific integrable switching module with terminal block for time switch



Auxiliary contact for power switches and circuit breakers. Integrates the V3-83161 mechanism

Warning:

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MINIATURE MICROSWITCHES - PREMIUM

V3 Dual-current - 83161

- › High precision flexible leaf snap-action mechanism
- › Operation without balance-point, even at extremely slow actuating speed
- › Broad range of operating forces from 0.15 N to 3 N
- › Use from 1 mA 4 V_{DC} to 5 A 250 V_{AC}
- › Operating temperature from -60 °C up to +150 °C - High resistance to shock and vibration
- › Mechanical life up to 50 million cycles
- › ENEC and cURus approved
- › Wide choice of actuators on 4 possible fixing positions (pre-assembled or retrofittable)



Main specifications

Function	Connections	Dual-current 831618		Dual-current High force 831618 SP4174		Dual-current Very low force 831619		Dual-current Ultra low force 831619 SP4136	
		Standard	UL	Standard	UL	Standard	UL	Standard	UL
I (changeover)	W2 (solder)	83161801	83168021	83168015	83168008	83161928	●	83161901	●
I (changeover)	W3 (QC 6.3x0.8)	83161806	83161873	83161832	83161894	83161906	●	83161904	83161917
I (changeover)	W6A5 (QC 4.8x0.5)	83161812	83161813	●	●	●	●	●	83161911
I (changeover)	W3R5 (QC 6.3x0.8, Rast 5)	●	●	●	●	●	●	●	●
I (changeover)	W5 (screw + clamp)	●	●	●	●	●	●	●	●
I (changeover)	W6D8 (QC 4.8x0.8)	●	●	●	●	●	●	83161915	●
I (changeover)	W7A5 (QC 2.8x0.5)	83161803	●	●	●	●	●	●	●
I (changeover)	2W7A8 (QC 2.8x0.8, double)	●	●	●	●	●	●	●	●
R (normally closed)	W2 (solder)	83161807	●	●	83168024	●	●	●	●
R (normally closed)	W3 (QC 6.3x0.8)	83161821	●	●	●	83161907	●	83161916	●
R (normally closed)	W6A5 (QC 4.8x0.5)	●	●	●	●	●	●	●	●
R (normally closed)	W3R5 - W5 - W6D8 W7A5 - 2W7A8	●	●	●	●	●	●	●	●
C (normally open)	W2 (solder)	83161818	●	●	●	●	●	●	●
C (normally open)	W3 (QC 6.3x0.8)	83161822	83161827	●	●	●	●	●	●
C (normally open)	W6A5 (QC 4.8x0.5)	83161826	83161819	●	●	●	83161908	●	●
C (normally open)	W3R5 - W5 - W6D8 W7A5 - 2W7A8	●	●	●	●	●	●	●	●
Electrical characteristics									
Rating nominal / 250 V AC (A)		5*		5*		4*		4*	
Rating thermal / 250 V AC (A)		6		6		5		5	
Rating ENEC/NF / 250 V AC (A)		0.1(0.04)	0.1(0.04)	0.1(0.04)	0.1(0.04)	0.1(0.04)	0.1(0.04)	0.1(0.04)	0.1(0.04)
Rating UL / 125 V AC (A)		-	1	-	1	-	1	-	1
Mechanical characteristics									
Maximum operating force (N)		0.8		3		0.25		0.15	
Min. Release force (N)		0.2		1		0.05		0.04	
Maximum total travel force (N)		2		4.5		0.40		0.2	
Max. permitted overtravel force (N)		20		20		20		20	
Maximum rest position (mm)		16.2		16.1		16.3		16.3	
Operating position (mm)		14.7±0.3		14.7±0.4		14.7±0.4		14.7±0.3	
Maximum differential travel (mm)		0.35		0.35		0.35		0.35	
Min. overtravel (mm)		1.2		1.1		1.1		1.2	
Ambient operating temperature (°C)		-60 → +125		-60 → +125		-40 → +125		-40 → +125	
Mechanical life for 2/3 OT (operations)		2 x 10 ⁷		10 ⁷		5 x 10 ⁷		5 x 10 ⁷	
Contact gap (mm)		0.4		0.4		0.4		0.4	
Weight (g)		5.6		5.6		5.6		5.6	

Additional specifications

- Case: PA6 GF (UL 94-V2 / GWFI 960 °C) - Standard versions
PBT GF (UL 94-V0 / GWFI 960 °C) - UL versions
PET GF (UL 94-V0 / GWFI 960 °C / GWIT 775 °C) - On request
- Button: PA66
- Moving blade: silver-plated beryllium copper
- Contacts: gold alloy on silver alloy, crossbar (dual-current)
- Terminals: brass (except W2 : copper nickel)
- Levers: stainless steel or polyamide, polyamide roller
- Nuts for 161L: nickel-plated brass

- Degree of protection: IP40 (mechanism)
- Proof tracking index: PTI 250
- Protection against electric shock: button and 161-type actuators have reinforced insulation for Ui 250V / Uimp 2.5kV / pollution 2
- Recommended min actuating speed: 0.001 mm/s

- Certification marks: Standard versions:
- UL versions:

Product adaptations

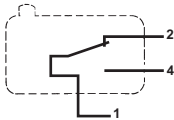


- › Special levers: special shapes and lengths, flexible levers, adjustable, two-pole, pinned,
- › Special connections: angled, with 7mm spacing (RAST 7-W3R7), for PCB, long solder (W2L), ...
- › High operating temperature: +150 °C
- › Reduced or increased switching hysteresis: max 0.1 mm to max 0.8 mm differential travel
- › Specific operating force easily achievable
- › Telescopic plunger and adjustable fixing by threaded barrel: plastic version (161L accessory) or metal version (SP9603)
- › Housing material complying with IEC 60335-1 for unattended appliances: GWFI 850° C / GWIT 775° C (SP9680)

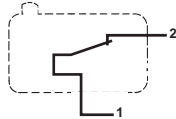
Principles

Single break snap-action switch

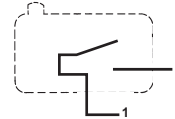
Changeover - SPDT (form C)



Normally closed - SPST-NC (form B)

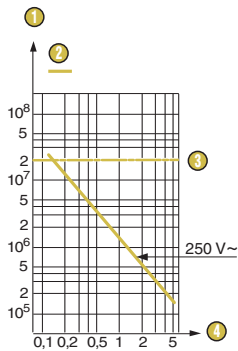


Normally open - SPST-NO (form A)



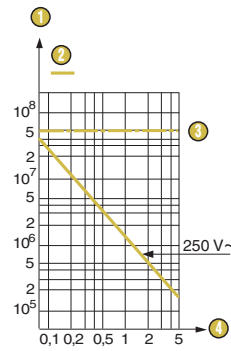
Curves

Operating curve for type 831618 and 831618 SP 4174



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

Operating curve for types 831619 and 831619 SP 4136



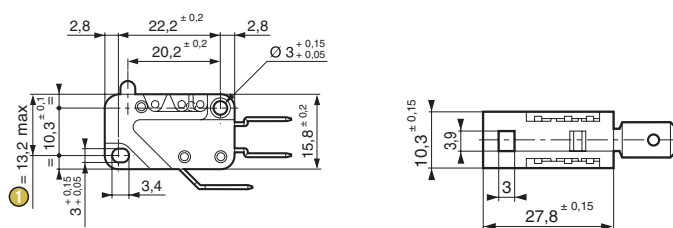
- ① Number of cycles
- ② Resistive circuit
- ③ Mechanical life limit
- ④ Current in Amps

* These models 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

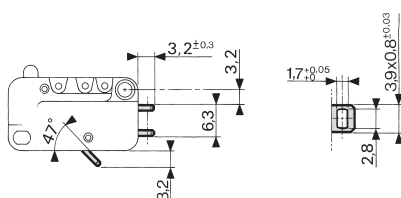
83161



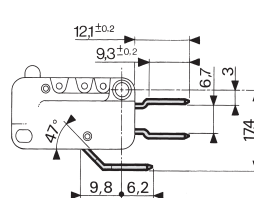
① Total travel position

Connections

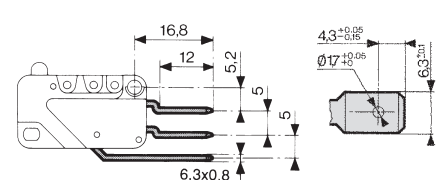
W2 solder

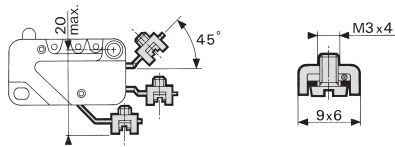
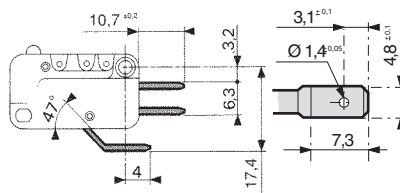
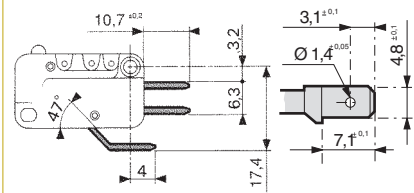
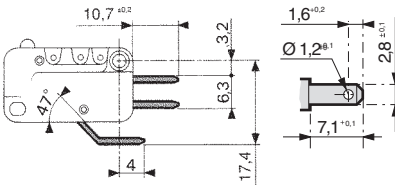
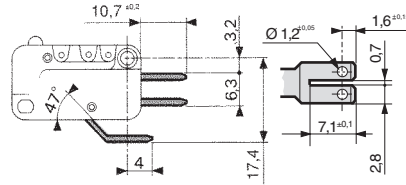
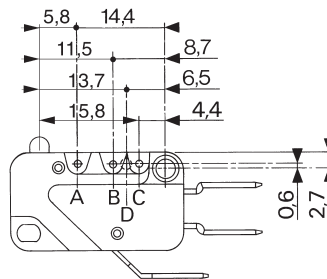
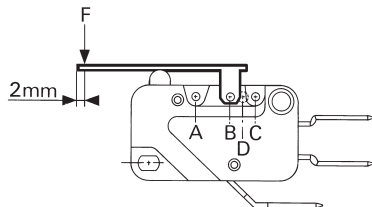


W3 quick-connect 6.3 x 0.8



W3R5 quick-connect 6.3x0.8 for RAST 5 connector



W5 screw**W6A5 quick-connect 4.8 x 0.5****W6D8 quick-connect 4.8 x 0.8****W7A5 quick-connect 2.8 x 0.5****2W7A8 quick-connect 2.8 x 0.8, double****Actuator mounting positions****To calculate force**

Divide the switch force by the coefficient given in the table.

To calculate travel

Multiply the switch travel by the same coefficient.

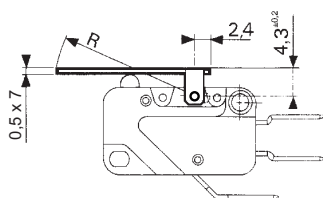
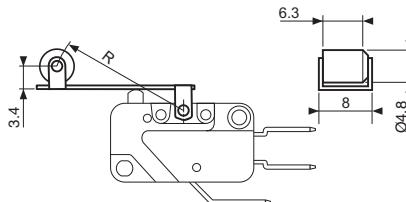
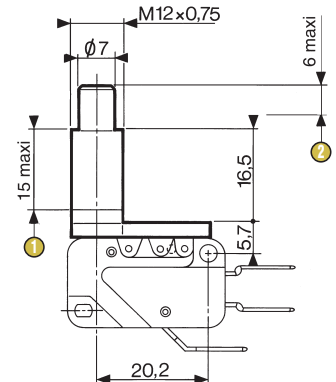
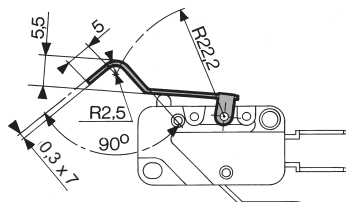
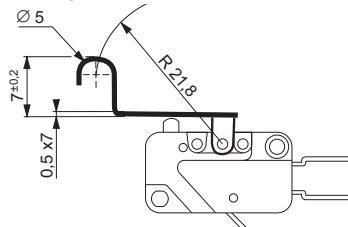
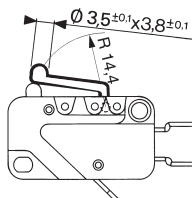
Example :

83 161 8 with lever 161 A - R 25.4 position A

(coeff. 4)

Operating force: $0.8 : 4 = 0.2 \text{ N}$

Overtravel: $1.2 \times 4 = 4.8 \text{ mm}$

Actuators**161A flat****161E roller****161L telescopic plunger****161F dummy roller****161G dummy roller****161V plastic**

Other shapes and dimensions: consult us

Also available are pinned actuators mounted on position D (factory mounting), same as for 83160 series. (datasheet: SP9640)

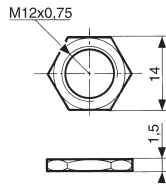
① Thread length

② Total travel

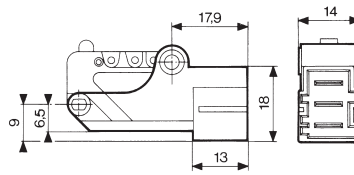
Nut thickness	Max. torque
1.5 mm	0.5 N.m
2 mm	0.7 N.m
2.5 mm	1 N.m

Mounting accessories

Nut for 161L

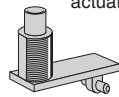
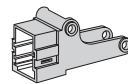


Housing 161J for connections W3 R5



Actuators and mounting accessories

Part numbers for standard actuators	79215740	70507524	79215742	70507529	70507528
Actuators	Flat 161A R14.2	Flat 161A R25.4	Roller 161E R13.6	Roller 161E R24.1	Dummy roller 161F R22.2
					
Fixing positions	A B	A B C	A B	A B C	A B
Coefficient	2 1	4 2 1.5	2 1	4 2 1.5	3.6 1.8
Operating position (mm)	15.2 ±1 15.2 ±0.45	15.2 ±2.5 15.2 ±1 15.2 ±0.8	20.5 ±1.5 20.5 ±0.8	20.5 ±2.9 20.5 ±1.5 20.5 ±1.2	20.4 ±2 20.4 ±0.7

Part numbers for standard actuators				79218651	79250338	70602118		
Actuators	Dummy roller 161G R21,8			**Telescopic plunger 161L	Manual actuation	Plastic 161V	Housing 161J	Nut for 161L
								
Fixing positions	A	B	C	D		D		
Coefficient	3	1.8	1.2	1		1		
Operating position (mm)	21.7 ±2	21.7 ±0.7	21.7 ±0.5	21.5 ±1		18.55 ±0.45		

Except where otherwise indicated, flat and roller levers are supplied unmounted.

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

** For 831618, 831618 SP4174. Mounted in factory (supplied without nut)

V3 Dual-current - 83161 microswitches with referenced actuators

Actuators			161A R14.2		161A R25.4			161E R13.6		161E R24.1			161L
			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
831618	I W2	STD	83161838	83161839	83161840	83161841	83161842	83161843	83161844	83161845	83161846	83161847	83161833
		UL	●	●	●	●	●	●	●	●	●	●	●
	I W3	STD	83161850	83161851	83161852	83161853	83161854	83161855	83161856	83161857	83161858	83161859	83161820
		UL	●	●	●	●	●	●	●	●	●	●	●
	I W6A5	STD	83161862	83161863	83161864	83161865	83161866	83161867	83161824	83161868	83161869	83161870	●
		UL	●	●	●	●	●	●	●	●	●	●	●

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* + Mounting accessories*
* if needed

Example: 831618 C W6A5 UL 161L SP9680 + 70602118

Standard product

Product made to order

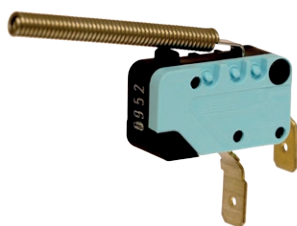


Contact us

Examples of special adaptations



Plastic lever with no play in rest position



Spring lever for extra-long overtravel



One-way roller lever (active on right, idle-return on left)



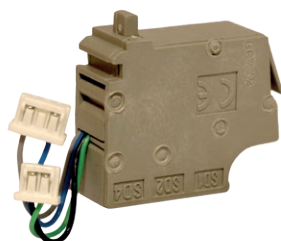
Angled W3 terminals



Telescopic plunger and adjustable fixing. 4mm overtravel.
Metal version for heavy duty. Long barrel.



Fully specific integrable switching module with terminal block for time switch



Auxiliary contact for power switches and circuit breakers. Integrates the V3 - 83161 mechanism



Door switch for industrial vehicle

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