

# 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
<b>Function</b>	<b>Connections</b>		
I (changeover)	W2	<b>83 161 102</b>	●
I (changeover)	W3	<b>83 161 118</b>	●
I (changeover)	W6A5*	<b>83 161 110</b>	●
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*	●	●
<b>Electrical characteristics</b>			
Rating nominal / 250 V AC (A)		16	20
Rating thermal / 250 V AC (A)		20	22
<b>Mechanical characteristics</b>			
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 <sup>±0.4</sup>	14.7 <sup>±0.4</sup>
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 <sup>7</sup>	2.5 x 10 <sup>5</sup>
Contact gap (mm)		0.4	0.4
Weight (g)		5.6	5.6
<b>Comments</b>			
* 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

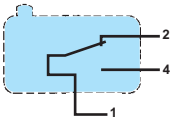
## Product adaptations



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

# Principles

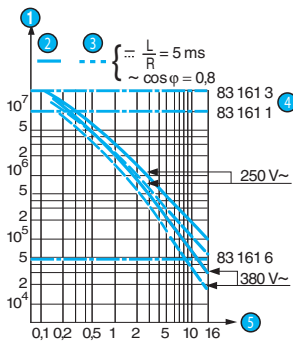
## Single break changeover switch



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 <sup>±0.3</sup>	14.7 <sup>±0.4</sup>	14.7 <sup>±0.4</sup>	14.7 <sup>±0.3</sup>	14.5 <sup>±0.4</sup>
0.35	0.35	0.35	0.35	0.8
1.2	1.2	1.1	1.2	0.9
-20 → +125	-20 → +125	-20 → +125	-20 → +125	-20 → +125
2 x 10 <sup>7</sup>	3 x 10 <sup>7</sup>	5 x 10 <sup>7</sup>	5 x 10 <sup>7</sup>	5 x 10 <sup>4</sup>
0.4	0.4	0.4	0.4	3.2
5.6	5.6	5.6	5.6	5.6

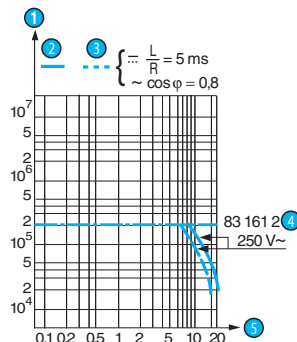
## Curves

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



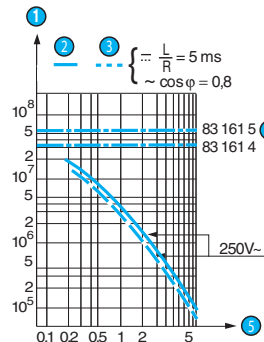
- 1 Number of cycles
- 2 Resistive circuit
- 3 Inductive circuit
- 4 Mechanical life limit
- 5 Current in Amps

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

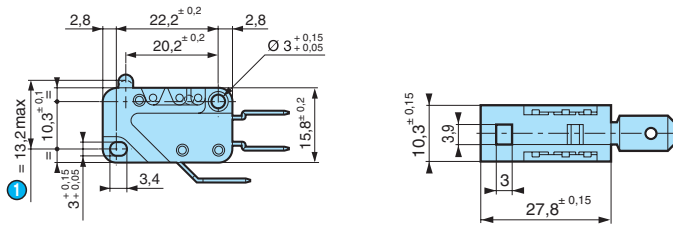


- 1 Number of cycles
- 2 Resistive circuit
- 3 Inductive circuit
- 4 Mechanical life limit
- 5 Current in Amps

## Dimensions

### → Product

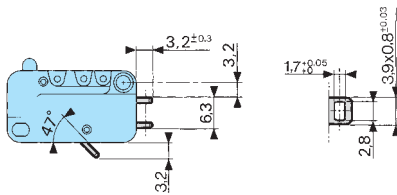
83 161



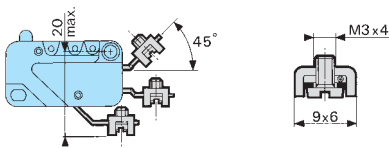
1 OL

### → Connections

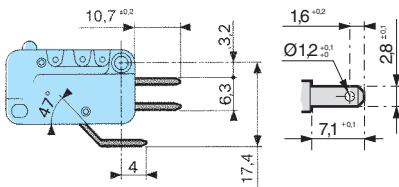
W2 solder



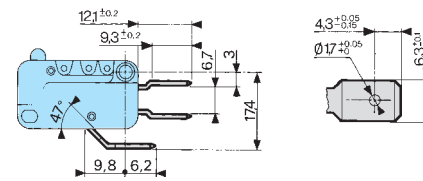
W5 screw



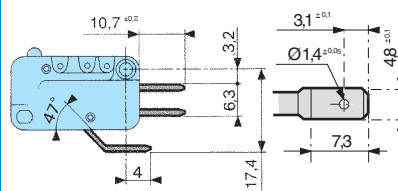
W7A5 for 2.8 mm clips (2.8 x 0.5)



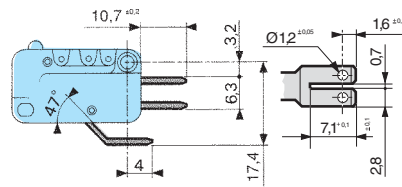
W3 for 6.35 mm clips (6.3 x 0.8)



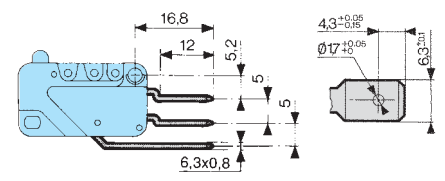
W6A5 for 4.8 mm clips (4.8 x 0.5)



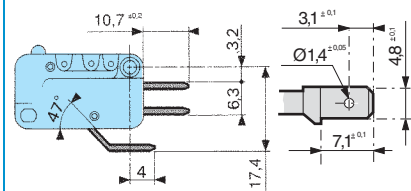
2W7A8 for 2.8 mm clips (2.8 x 0.8)



W3R5 for 6.35 mm clips (6.3 x 0.8)

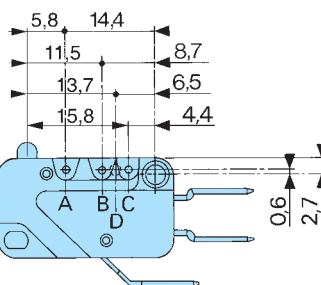
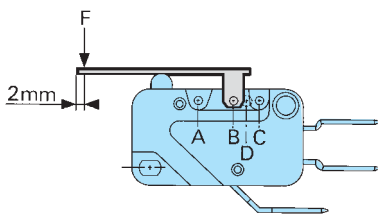


W6D8 for 4.8 mm clips (4.8 x 0.8)



### → 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 :

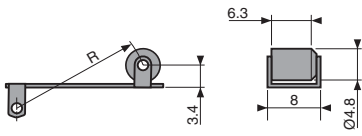
83 161 3 with lever 161 A - R 25.4 position A (coeff. 4)

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

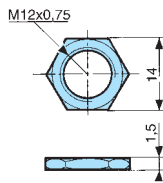
Pre-travel :  $1.4 \times 4 = 5.6 \text{ mm}$

→ Actuators

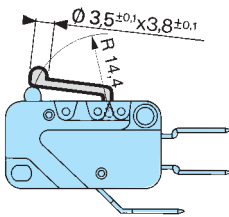
161 E



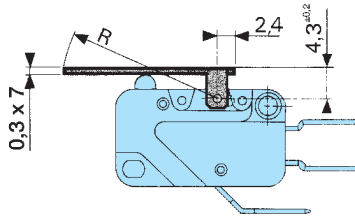
Nut 70 602 118



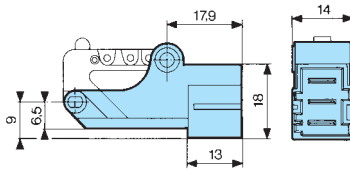
161 V



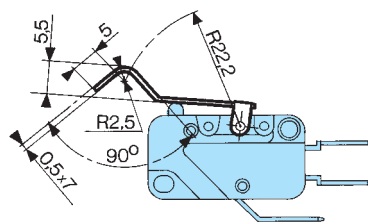
161 A



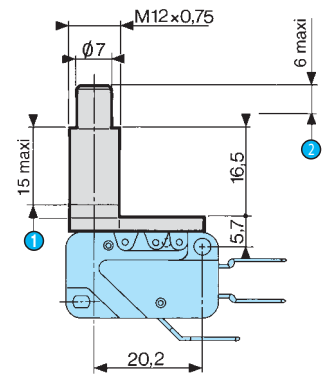
Housing 161 J for connections W3 R5



161 F








161 L


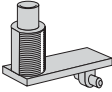

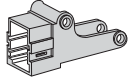




- ① Thread
- ② Total travel

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

## 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 <sup>±1</sup>	15,2 <sup>±0,45</sup>	15,2 <sup>±25</sup>	15,2 <sup>±1</sup>	15,2 <sup>±0,8</sup>	20,5 <sup>±1,5</sup>	20,5 <sup>±0,8</sup>	20,5 <sup>±29</sup>	20,5 <sup>±1,5</sup>	20,5 <sup>±1,2</sup>	20,4 <sup>±2</sup>	20,4 <sup>±0,7</sup>
Tripping point 83 161 6	14,8 <sup>±1</sup>	15 <sup>±0,45</sup>	14,4 <sup>±25</sup>	14,8 <sup>±1</sup>	14,9 <sup>±0,8</sup>	20,1 <sup>±1,5</sup>	20,3 <sup>±0,8</sup>	19,7 <sup>±29</sup>	20,1 <sup>±1,5</sup>	20,2 <sup>±1,2</sup>	20,2 <sup>±2</sup>	20,2 <sup>±2</sup>

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		D		D		D	
Coefficient	3	1,8	1			1		1		1		1	
Tripping point (except 83 161 6)	21,7 <sup>±2</sup>	21,7 <sup>±0,7</sup>	21,5 <sup>±1</sup>			18,35 <sup>±0,45</sup>		18,35 <sup>±0,45</sup>		18,35 <sup>±0,45</sup>		18,35 <sup>±0,45</sup>	
Tripping point 83 161 6	21,5 <sup>±2</sup>	21,5 <sup>±0,7</sup>	21,5 <sup>±1</sup>			18,35 <sup>±0,45</sup>		18,35 <sup>±0,45</sup>		18,35 <sup>±0,45</sup>		18,35 <sup>±0,45</sup>	

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
<b>Function</b>	<b>Connections</b>			
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	●	●	●
<b>Electrical characteristics</b>				
Rating nominal / 250 V AC (A)		0.1	0.1	0.1
Rating thermal / 250 V AC (A)		6	6	5
<b>Mechanical characteristics</b>				
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 <sup>±0.3</sup>	14.7 <sup>±0.4</sup>	14.7 <sup>±0.3</sup>
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 <sup>7</sup>	5 x 10 <sup>7</sup>	5 x 10 <sup>7</sup>
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

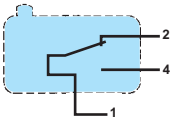


- Special levers
- Special connections
- Specific fixing
- High operating temperature
- Special operating force
- Approvals : UL - cUL

To order, see page 12

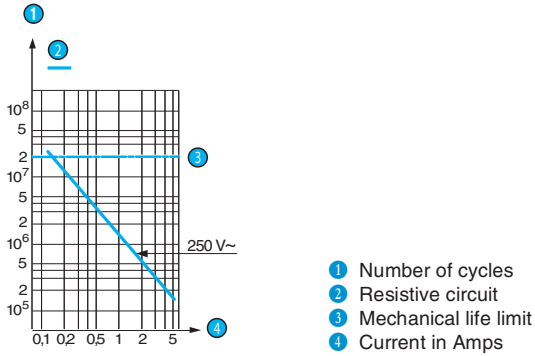
## Principles

### Single break changeover switch

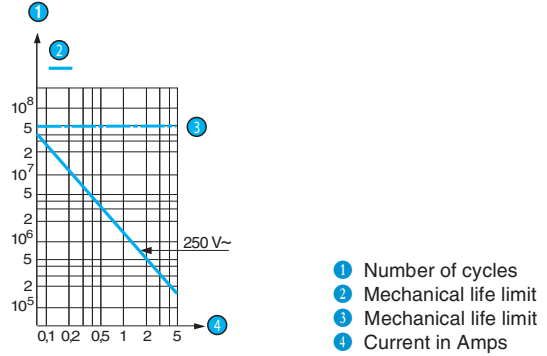


## Curves

### Operating curve for type 83 161 8



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



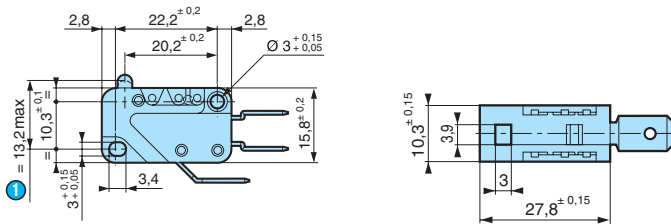
### For types 83 161 8 - 9 and 9 SP 4136 Dual-current

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.

## Dimensions

### → Product

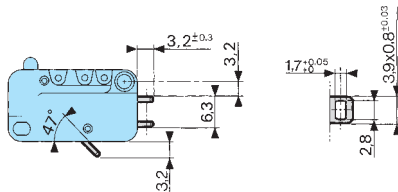
#### 83 161



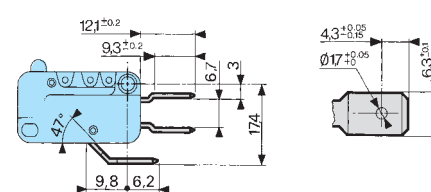
#### 1 OL

### → Connections

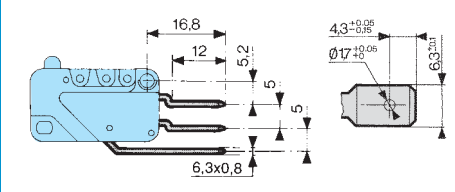
#### W2 solder



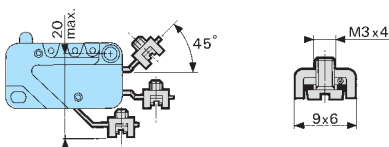
#### W3 (6.3 x 0.8) for 6.35 mm clips



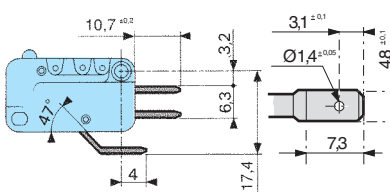
#### W3R5 (6.3 x 0.8) for 6.35 mm clips



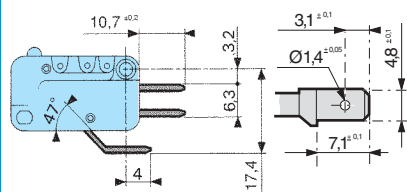
#### W5 screw



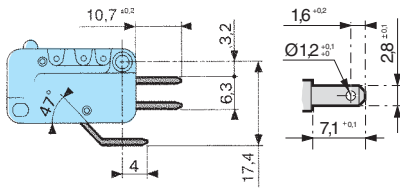
#### W6A5 (4.8 x 0.5) for 4.8 mm clips



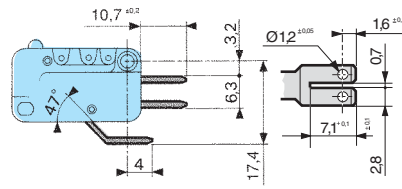
#### W6D8 (4.8 x 0.8) for 4.8 mm clips



W7A5 (2.8 x 0.5) for 2.8 mm clips

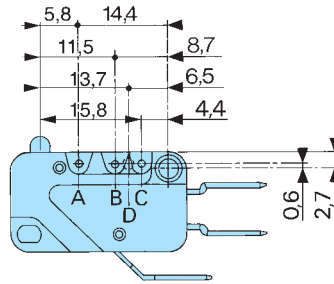
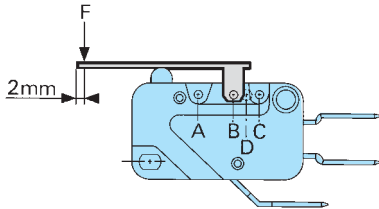


2W7A8 2 x (2.8 x 0.8) for 2.8 mm clips



→ 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 :

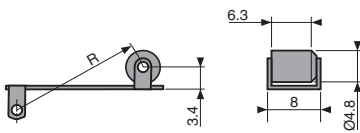
83 161 8 with lever 161 A - R 25.4 position A (coeff. 4)

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

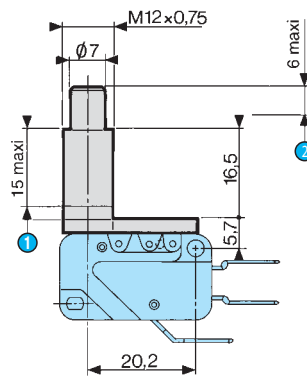
Pre-travel :  $1.4 \times 4 = 5.6 \text{ mm}$

→ Actuators

161 E



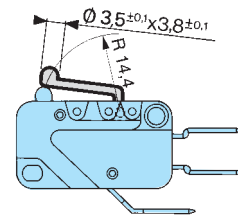
161 L



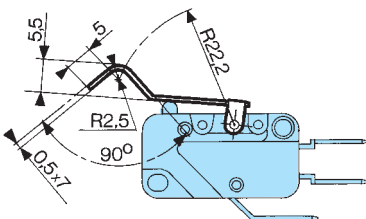
- ① Thread
- ② Total travel

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

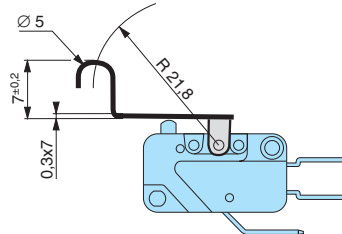
161 V



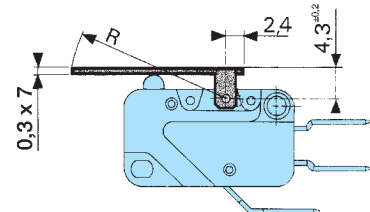
161 F



161 G



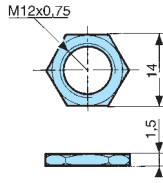
161 A



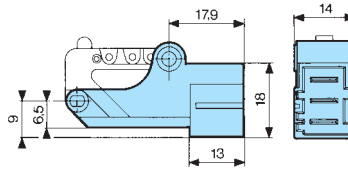


## → Mounting accessories

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 161ER13,6		Roller 161ER24,1			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