

# Compact Limit Switches

## AEP Series (Side Rotary Lever Actuator)

- Double insulated plastic housings
- 1m cable/5-pin M12 quick-disconnect (right exit)
- 1 N.O. and 1 N.C. contact on all units
- Compact size with standard 25mm hole spacing
- Epoxy resin-filled for IP67 rating
- Snap-action (Z11) contacts
- N.C. contacts are positive-opening operated unless otherwise noted.

AEP2G Series Compact Limit Switches Selection Chart							
Part Number	Price	Drawing Link	Actuator Type	Max. Actuation Speed (m/s [ft/sec])	Min. Actuation Force (N) or Torque (N•m)	Min. Positive Opening Force (N) or Torque (N•m)	Connection Type
<a href="#">AEP2G41Z11-1</a>		<a href="#">PDF</a>	Side rotary lever with 14mm nylon roller	1.5 [4.92]	0.08 N•m [0.06 lb•ft]	0.28 N•m [0.21 lb•ft]	3.28 ft [1m] cable bottom exit
<a href="#">AEP2G41Z11MR</a>		<a href="#">PDF</a>	Side rotary lever with 14mm nylon roller	1.5 [4.92]	0.08 N•m [0.06 lb•ft]	0.28 N•m [0.21 lb•ft]	5-pin M12 quick-disconnect (right)
<a href="#">AEP2G42Z11-1</a>		<a href="#">PDF</a>	Side rotary lever with 14mm metal roller	1.5 [4.92]	0.08 N•m [0.06 lb•ft]	0.28 N•m [0.21 lb•ft]	3.28 ft [1m] cable bottom exit
<a href="#">AEP2G42Z11MR</a>		<a href="#">PDF</a>	Side rotary lever with 14mm metal roller	1.5 [4.92]	0.08 N•m [0.06 lb•ft]	0.28 N•m [0.21 lb•ft]	5-pin M12 quick-disconnect (right)
<a href="#">AEP2G43Z11-1</a>		<a href="#">PDF</a>	Side rotary lever with 14mm ball bearing roller	1.5 [4.92]	0.08 N•m [0.06 lb•ft]	0.28 N•m [0.21 lb•ft]	3.28 ft [1m] cable bottom exit
<a href="#">AEP2G43Z11MR</a>		<a href="#">PDF</a>	Side rotary lever with 14mm ball bearing roller	1.5 [4.92]	0.08 N•m [0.06 lb•ft]	0.28 N•m [0.21 lb•ft]	5-pin M12 quick-disconnect (right)
<a href="#">AEP2G51Z11-1</a>		<a href="#">PDF</a>	Side rotary adjustable lever with 18mm nylon roller	1.5 [4.92]	0.08 N•m [0.06 lb•ft]	0.28 N•m [0.21 lb•ft]	3.28 ft [1m] cable bottom exit
<a href="#">AEP2G51Z11MR</a>		<a href="#">PDF</a>	Side rotary adjustable lever with 18mm nylon roller	1.5 [4.92]	0.08 N•m [0.06 lb•ft]	0.28 N•m [0.21 lb•ft]	5-pin M12 quick-disconnect (right)
<a href="#">AEP2G71Z11-1</a>		<a href="#">PDF</a>	Side rotary adjustable 3mm stainless steel rod	1.5 [4.92]	0.08 N•m [0.06 lb•ft]	0.28 N•m [0.21 lb•ft]	3.28 ft [1m] cable bottom exit
<a href="#">AEP2G71Z11MR</a>		<a href="#">PDF</a>	Side rotary adjustable 3mm stainless steel rod	1.5 [4.92]	0.08 N•m [0.06 lb•ft]	0.28 N•m [0.21 lb•ft]	5-pin M12 quick-disconnect (right)



AEP2G41Z11-1



AEP2G42Z11-1



AEP2G43Z11-1



AEP2G51Z11-1

### Housing style



3.28 ft [1m] cable, bottom exit



5-pin M12 quick-disconnect (right)

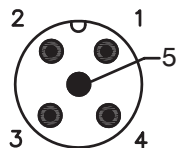


AEP2G71Z11-1

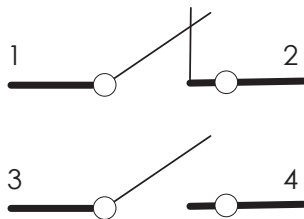
# Compact Limit Switches

## AEP Series Plastic Housing (Side Rotary Lever Actuator)

### Connector

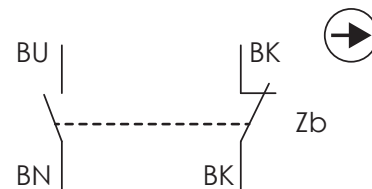


### Contact Configuration



*Note: Pin 5 is not connected*

Z11 Snap-action contacts  
1 N.O. and 1 N.C.



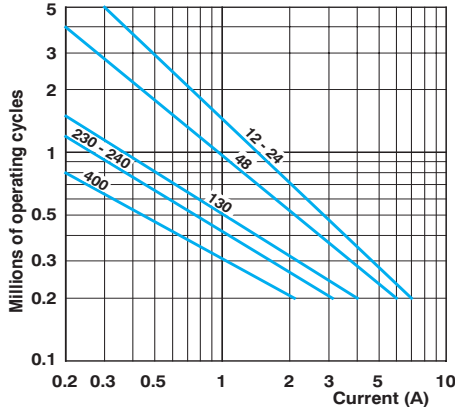
# Compact Limit Switches

Compact Limit Switches Specifications		
<b>Series</b>	<b>AEP Plastic Housing</b>	
<b>Approvals</b>	UL file E191072, CE	
<b>Environmental</b>		
<b>Degree of Protection</b>	IP67 according to IEC 60529	
<b>Temperature Range</b>	Storage: -40 to 70°C (-40 to 158°F). Operating: -25 to 70°C (-13 to 158°F)	
<b>Mechanical Ratings</b>		
<b>Mechanical Life</b>	10 million operations. Models G11,G12,G41,G42,G43,G51,G71 5 million operations. Models G16, G92, G93	
<b>Enclosure Material</b>	Reinforced Thermoplastic	
<b>Contact Blocks Rating</b>		
<b>Positive Opening</b>	Yes, except G92, G93	
<b>Electrical Ratings</b>	<b>AC15</b>	Make: 100A @ 24VAC; 60A @ 120VAC; 30A @ 240VAC Break: 10A @ 24VAC; 6A @ 120VAC; 3A @ 240VAC
	<b>DC13</b>	2.8A @ 24VDC; 0.55A @ 125VDC; 0.27A@250VDC
<b>Maximum Switching Frequency</b>	Contact blocks: all one cycle per second	
<b>Repeat Accuracy</b>	0.05 mm on the operating points at 1 million operations	
<b>Short-Circuit Protection</b>	10A @ <500V	
<b>Contact Resistance</b>	25mΩ	
<b>Head Rotation</b>	180 Degree Only	
<b>Rated Insulation Voltage</b>	B300, R300 according to UL508 400V (degree of pollution: 3) according to IEC 60947-1	
<b>Connection Type</b>	Cable: 1m [3.28 ft] PVC cable, 4 x 0.75mm <sup>2</sup> (18 AWG). Overall cable diameter: 7mm [0.275 in.] Connector: 5-pin M12 quick disconnect	
<b>Wiring Terminal Markings</b>	Cable Models: N.C. Black/Black, NO Blue/Brown M12 Models: N.C. Pin 1-2, NO Pin 3-4	
<b>Electrical Protection</b>	Class I according to IEC60536-1	
<b>Contact Blocks Performance</b>		
<b>Operation Frequency</b>	3600 ops/h	
<b>Electrical Durability (according to IEC 947-5-1)</b>	Utilization categories AC-15 and DC-13; load factor of 0.5	
<b>Torque</b>	N/A	

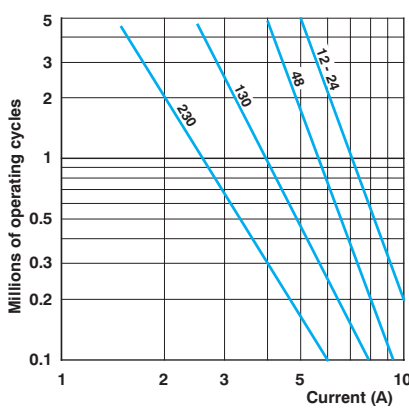
# Limit Switches Supplemental

## Electrical Durability (according to IEC 947-5-1)

### AC-15 Snap Action



### AC-15 Slow Action



#### Limit switch types

**Snap-action contact:** A contact element in which the contact motion is independent of the speed of the actuator. This feature ensures reliable electrical performance even in applications involving very slow moving actuators.

**Slow-make/slow-break contacts:** A contact element in which the contact motion is dependent on the actuator speed.

#### Terminal identification (IEC)

Each terminal is marked with two digits. The first digit indicates the pole (circuit). The second digit indicates the type of contact.

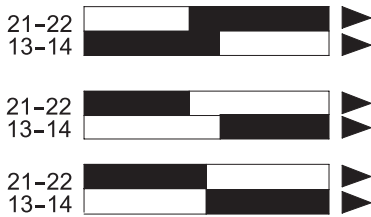
\_1-\_2 is N.C., \_3-\_4 is N.O.  
so 11-12, 21-22 are N.C., while 13-14, 23-24 are N.O.

DC-13	Snap Action	Slow Action
	Power breaking for a durability of 5 million cycles	
24V	9.5 W	12W
48V	6.8 W	9W
110V	3.6 W	6W

Terminal Markings	
European	
Terminal No.	Type
11-12	N.C. contact of pole no. 1 <sup>1</sup>
13-14	N.O. contact of pole no. 2 <sup>1</sup>
21-22	N.C. contact of pole no. 2 <sup>2</sup>
23-24	N.O. contact of pole no. 1 <sup>2</sup>

<sup>1</sup> With non-isolated contacts    <sup>2</sup> With isolated contacts

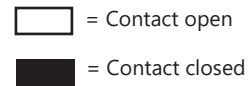
Note: Green/yellow wire is physical earth ground.



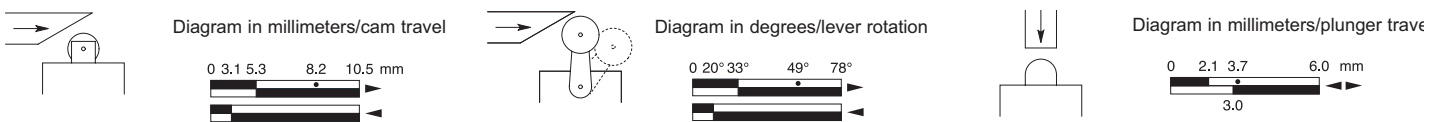
**Make-before-break (overlapping) SPDT:** the N.O. contact closes before the N.C. contact opens. (See ex: Y11)

**Break-before-make (offset) SPDT:** the N.C. contact opens before the N.O. contact closes. (See ex: X11)

**Simultaneous make and break SPDT:** the N.C. contact opens at the same time as the N.O. contact closes. (See ex: Z11)



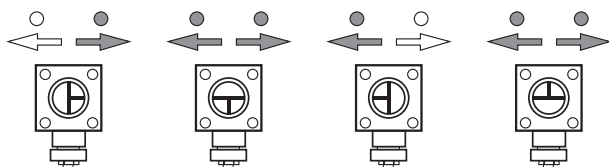
#### Bar Chart Examples (cam angle is 30 degrees)



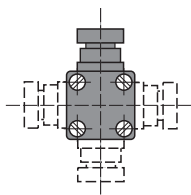
## Changeable working heads (E42, E52, E71)

View of cam insert when looking at bottom of head once removed from switch body.

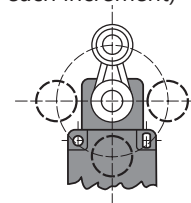
To change position, push in and twist until it locks into place



Positioning - 90° each way



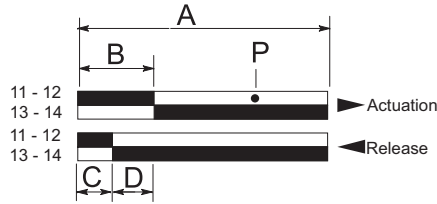
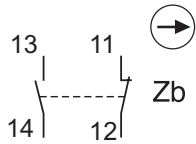
Adjustable lever from 0-360° (6° each increment)



# Contact Displacement Values

## Z11 Snap Action Contacts

1 N.O. and 1 N.C.



A = Max. travel of the operator in mm or degrees

B = Tripping travel of both contacts on actuation

C = Tripping travel of both contacts on release

D = Differential travel (between actuation and release)

P = Point from which positive opening is assured during actuation

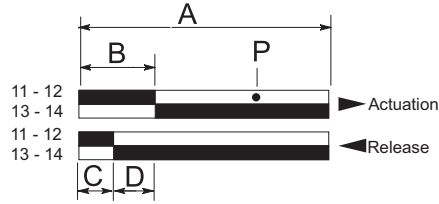
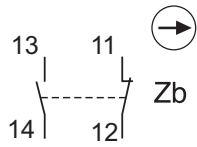
Contact Displacement Values				
Part Series	Displacement Values — mm [in] or degrees			
	A	B	C	P
<b>AEM Halogen</b>				
AEM2G12Z11-HF1	8.7 [0.343]	3.8 [0.150]	2.4 [0.095]	7.5 [0.295]
AEM2G16Z11-HF1	5 [0.197]	2.2 [0.867]	1.4 [0.055]	4.3 [0.169]
AEM2G42Z11-HF1	74°	32°	21°	65°
AEM2G51Z11-HF1	74°	32°	21°	65°
AEM2G71Z11-HF1	74°	32°	21°	65°
AEM2G93Z11-HF1	—	10°	20°	—
<b>AEP Series</b>				
AEPxG11Z11x	5 [0.197]	2.2 [0.867]	1.4 [0.055]	4.3 [0.169]
AEPxG12Z11x	8.7 [0.343]	3.8 [0.150]	2.4 [0.095]	7.5 [0.295]
AEPxG16Z11x	5 [0.197]	2.2 [0.867]	1.4 [0.055]	4.3 [0.169]
AEPxG41Z11x	74°	32°	21°	65°
AEPxG42Z11x	74°	32°	21°	65°
AEPxG43Z11x	74°	32°	21°	65°
AEPxG51Z11x	74°	32°	21°	65°
AEPxG71Z11x	74°	32°	21°	65°
AEPxG92Z11x	—	10°	20°	—
AEPxG93Z11x	—	10°	20°	—
<b>AAM Series</b>				
AAMxF11Z11x	5.6 [0.220]	2.5 [0.098]	1.3 [0.051]	4.1 [0.161]
AAMxF12Z11x	5.6 [0.220]	2.5 [0.098]	1.3 [0.051]	4.1 [0.161]
AAMxT14Z11x	5.6 [0.220]	2.5 [0.098]	1.3 [0.051]	4.1 [0.161]
AAMxT35Z11x	21 [0.827]	9 [0.354]	4.5 [0.177]	14.5 [0.571]
AAMxF43Z11x	74°	31°	17°	47°
AAMxF46Z11x	74°	31°	17°	47°
AAMxF53Z11x	74°	31°	17°	47°
AAMxF71Z11x	74°	31°	17°	47°
AAMxT93Z11x	—	12°	23°	—
<b>AAP Series</b>				
AAPxT10Z11x	5.6 [0.220]	2.5 [0.098]	1.3 [0.051]	4.1 [0.161]
AAPxT13Z11x	9.6 [0.378]	4.7 [0.185]	2.5 [0.098]	7.6 [0.299]
AAPxT14Z11x	5.6 [0.220]	2.5 [0.098]	1.3 [0.051]	4.1 [0.161]
AAPxT35Z11x	21 [0.827]	9 [0.354]	4.5 [0.177]	14.5 [0.571]
AAPxT41Z11x	74°	31°	17°	47°
AAPxT42Z11x	74°	31°	17°	47°
AAPxT45Z11x	74°	31°	17°	47°
AAPxT51Z11x	74°	31°	17°	47°
AAPxT5100Z11x	74°	31°	17°	47°
AAPxT5200Z11x	74°	31°	17°	47°
AAPxT71Z11x	74°	31°	17°	47°
AAPxT93Z11x	—	12°	23°	—

Contact Displacement Values tables continued on next page

# Contact Displacement Values (continued)

## Z11 Snap Action Contacts

1 N.O. and 1 N.C.



- A = Max. travel of the operator in mm or degrees
- B = Tripping travel of both contacts on actuation
- C = Tripping travel of both contacts on release
- D = Differential travel (between actuation and release)
- P = Point from which positive opening is assured during actuation

Contact Displacement Values				
Part Series	Displacement Values — mm [in] or degrees			
	A	B	C	P
<b>ABM Series</b>				
ABMxE11Z11	6.0 [0.235]	3.0 [0.118]	1.8 [0.071]	4.6 [0.181]
ABMxE13Z11	10.5 [0.413]	5.3 [0.209]	3.1 [0.122]	8.2 [0.323]
ABMxE32Z11	15.5 [0.610]	6.3 [0.248]	3.1 [0.122]	10.8 [0.425]
ABMxE42Z11	78°	33°	20°	49°
ABMxE52Z11	78°	33°	20°	49°
ABMxE71Z11	78°	33°	20°	49°
ABMxE92Z11	—	21°	9°	—
ABMxE93Z11	—	21°	21°	—
<b>ABP Series</b>				
ABPxH14Z11	5.9 [0.232]	2.2 [0.867]	1.0 [0.039]	3.8 [0.150]
ABPxH19Z11	10.5 [0.413]	4.6 [0.181]	2.4 [0.094]	7.5 [0.295]
ABPxH35Z11	17 [0.669]	6.8 [0.268]	3.8 [0.150]	11.3 [0.445]
ABPxH41Z11	90°	31°	19°	47°
ABPxH51Z11	90°	31°	19°	47°
ABPxH71Z11	90°	31°	19°	47°
ABPxH92Z11	—	27°	15°	—
ABPxH93Z11	—	27°	15°	—