Compact Limit Switches

AEP Series Plastic Housing
(Stainless Steel Spring Actuator)

- Double-insulated plastic housing
- 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

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
AEP2G92Z11-1		PDF	360 degree stainless steel spring with nylon tip	0.1 [0.33]	0.10 N•m [0.07 lb•ft]	—	3.28 ft [1m] cable bottom exit
AEP2G92Z11MR		PDF	360 degree stainless steel spring with nylon tip	0.1 [0.33]	0.10 N•m [0.07 lb•ft]	—	5-pin M12 quick-disconnect (right)
AEP2G93Z11-1		PDF	360 degree stainless steel spring	0.1 [0.33]	0.10 N•m [0.07 lb•ft]	—	3.28 ft [1m] cable bottom exit
AEP2G93Z11MR		PDF	360 degree stainless steel spring	0.1 [0.33]	0.10 N•m [0.07 lb•ft]	—	5-pin M12 quick-disconnect (right)

AEP2G92Z11-1

AEP2G93Z11-1

Housing style

3.28 ft [1m] cable, bottom exit

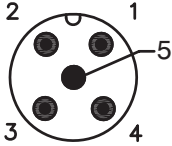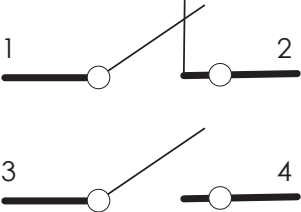**5-pin M12 quick-disconnect (right)**

Compact Limit Switches

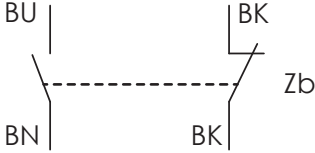## AEP Series Plastic Housing (Stainless Steel Spring Actuator)

Connector

```
    2       1
        5
    3       4
```

Contact Configuration

```
1 ───○   ○─── 2

3 ───○   ○─── 4
```

Note: Pin 5 is not connected

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

```
BU          BK

BN          BK      Zb
```

Compact Limit Switches

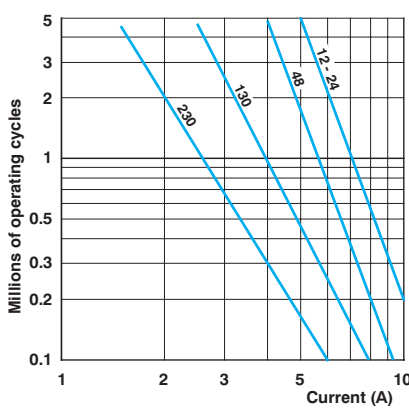| Compact Limit Switches Specifications	
Series	*AEP Plastic Housing*
Approvals	UL file E191072, CE
Environmental	
Degree of Protection	IP67 according to IEC 60529
Temperature Range	Storage: -40 to 70°C (-40 to 158°F). Operating: -25 to 70°C (-13 to 158°F)
Mechanical Ratings	
Mechanical Life	10 million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

Limit Switches Supplemental

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

AC-15 Snap Action

Millions of operating cycles vs Current (A)

AC-15 Slow Action

Millions of operating cycles vs Current (A)

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 [1]
13-14	N.O. contact of pole no. 2 [1]
21-22	N.C. contact of pole no. 2 [2]
23-24	N.O. contact of pole no. 1 [2]

[1] With non-isolated contacts   [2] With isolated contacts

Note: Green/yellow wire is physical earth ground.

▢ = Contact open

■ = Contact closed

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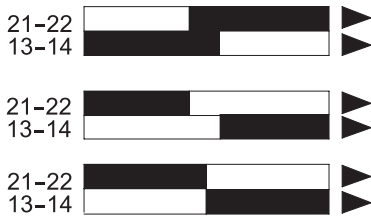
_1-_2 is N.C., _3-_4 is N.O.
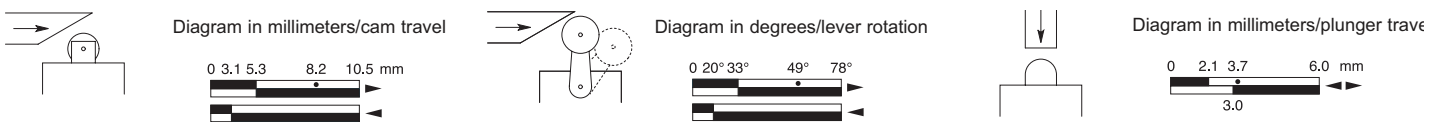so 11-12, 21-22 are N.C., while 13-14, 23-24 are N.O.

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)
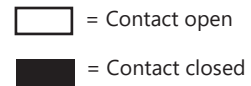
Bar Chart Examples
 (cam angle is 30 degrees)

Diagram in millimeters/cam travel

0 3.1 5.3   8.2   10.5 mm

Diagram in degrees/lever rotation

0 20° 33°   49°   78°

Diagram in millimeters/plunger trave

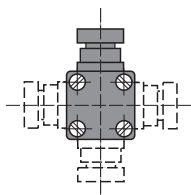0   2.1 3.7   6.0 mm
      3.0

Changeable working heads (E42, E52, E71)
View of cam insert when looking at bottom of head once removed from switch body.
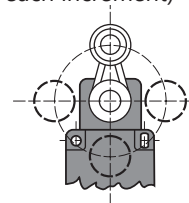
To change position, push in and twist
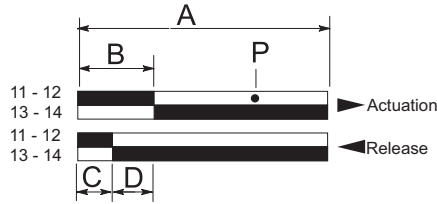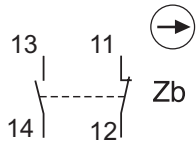until it locks into place
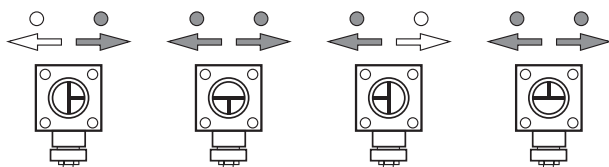
Positioning - 90° each way

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
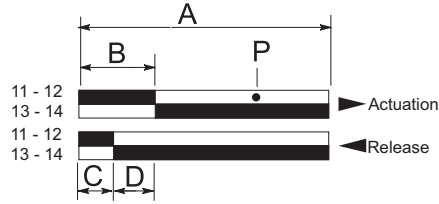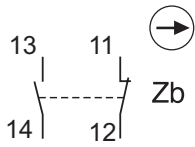
Contact Displacement Values				
Part Series	Displacement Values — mm [in] or degrees			
	A	B	C	P
AEM Halogen				
AEM2G12Z11-HF1	8.7 [0.343]	3.8 [0.150]	2.4 [0.095]	7.5 [0.295]
AEM2G16Z11-HF1	5 [0.197]	2.2 [0.867]	1.4 [0.055]	4.3 [0.169]
AEM2G42Z11-HF1	74°	32°	21°	65°
AEM2G51Z11-HF1	74°	32°	21°	65°
AEM2G71Z11-HF1	74°	32°	21°	65°
AEM2G93Z11-HF1	—	10°	20°	—
AEP Series				
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°	—
AAM Series				
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°	—
AAP Series				
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 contined 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**
ABM Series				
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	78º	33º	20º	49º
ABMxE52Z11	78º	33º	20º	49º
ABMxE71Z11	78º	33º	20º	49º
ABMxE92Z11	—	21º	9º	—
ABMxE93Z11	—	21º	21º	—
ABP Series				
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	90º	31º	19º	47º
ABPxH51Z11	90º	31º	19º	47º
ABPxH71Z11	90º	31º	19º	47º
ABPxH92Z11	—	27º	15º	—
ABPxH93Z11	—	27º	15º	—