

Compact Limit Switches

AEM Series Metal Housing (Halogen-Free Cable)

- Die-cast metal housings
- 1m halogen-free cable
- 1 N.O. and 1 N.C. contact on all units
- Compact size with standard 25mm hole spacing
- Wide offering of head actuators
- Epoxy resin filled for IP67 rating
- Snap-action (Z11) contacts
- N.C. contacts are positive-opening operated unless otherwise noted.

AEM2G Series Compact Limit Switches Selection Chart

Part Number	Price	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)	Head Dimensions	Connection Type
AEM2G12Z11-HF1	\$24.00	Metal plunger with metal roller	0.1 [0.33]	10N [2.25 lbf]	30N [6.74 lbf]	1	3.28 ft [1m] cable, bottom exit
AEM2G16Z11-HF1	\$24.00	Metal plunger with dust cap	0.5 [1.64]	15N [3.37 lbf]	30N [6.74 lbf]	2	3.28 ft [1m] cable, bottom exit
AEM2G42Z11-HF1	\$24.00	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	3.28 ft [1m] cable, bottom exit
AEM2G51Z11-HF1	\$24.00	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]	4	3.28 ft [1m] cable, bottom exit
AEM2G71Z11-HF1	\$24.00	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	3.28 ft [1m] cable, bottom exit
AEM2G93Z11-HF1*	\$24.00	360 degree stainless steel spring	0.1 [0.33]	0.10 N•m [0.07 lb•ft]	—	6	3.28 ft [1m] cable, bottom exit

* This unit is not a positive opening unit



AEM2G12Z11-HF1



AEM2G16Z11-HF1



AEM2G42Z11-HF1



AEM2G51Z11-HF1



AEM2G71Z11-HF1



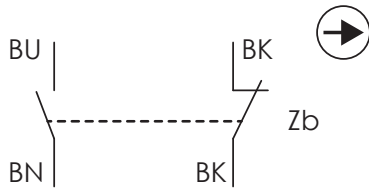
AEM2G93Z11-HF1

Compact Limit Switches

AEM Series Metal Housing (Halogen-Free Cable)

Contact Configuration

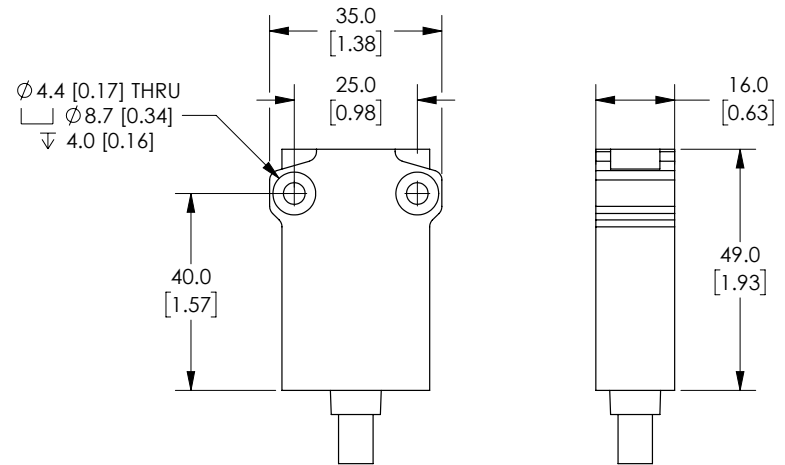
Z11 Snap-action contacts
1 N.O. and 1 N.C.



NOTE: Units are positive opening unless indicated otherwise in selection chart

Body Dimensions

mm [inches]



Head Dimensions

mm [inches]

Figure 1

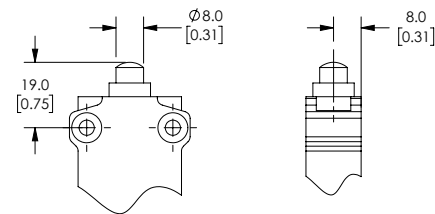


Figure 2

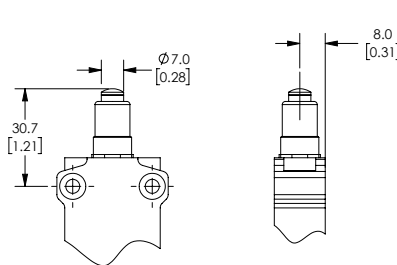


Figure 3

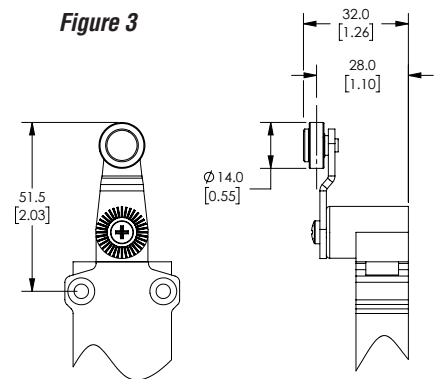


Figure 4

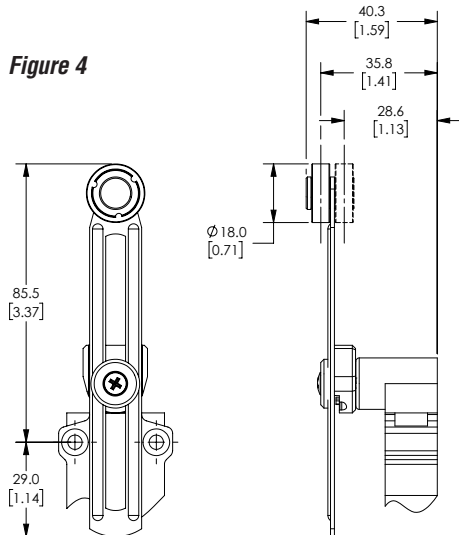


Figure 5

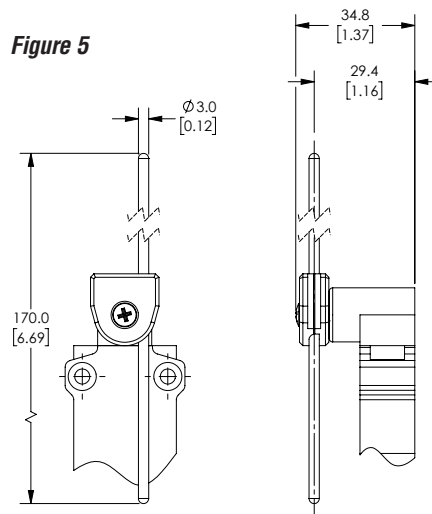
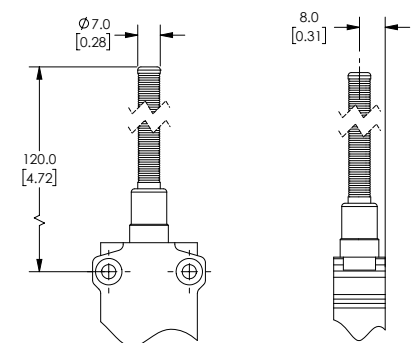


Figure 6



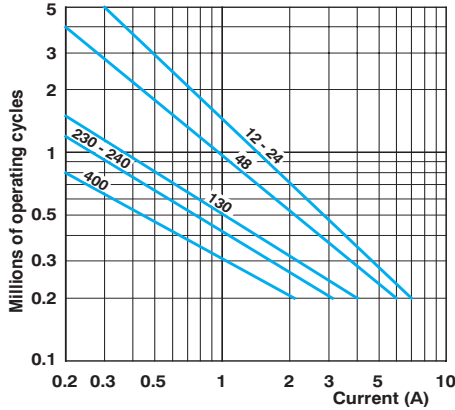
Compact Limit Switches

Compact Limit Switches Specifications		
AEM-HF1		
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 G12, G42, G51, G71 5 million operations: G16, G93.	
Enclosure Material	ZAMAK (zinc alloy)	
Contact Blocks Rating		
Positive Opening	Yes, except G93	
Electrical Ratings	AC15	Make: 100A @ 24VAC; 60A @ 120VAC; 30A @ 240VAC Break: 10A @ 24VAC; 6A @ 120VAC; 3A @ 240VAC
	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] Halogen Free cable, 5 x 0.75mm ² (18 AWG). Overall cable diameter: 8mm [0.31 in]	
Wiring Terminal Markings	N.C.: black/brown, N.O. blue/brown	
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	

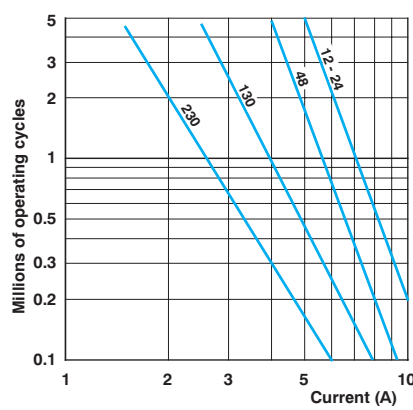
Limit Switches Supplemental

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

AC-15 Snap Action



AC-15 Slow Action

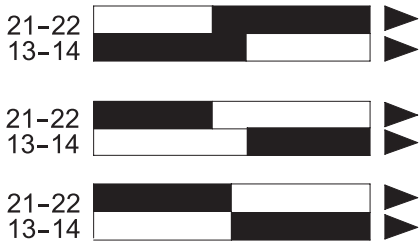


DC-13	Snap Action	Slow Action
	Power breaking for a durability of 5 million cycles	
24V	9.5 W	12W
48V	6.8 W	9W
110V	3.6 W	6W

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)

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

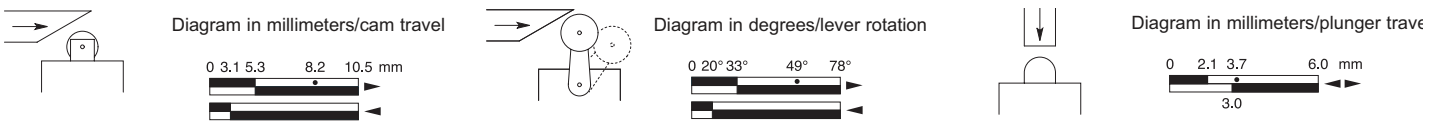
¹ With non-isolated contacts ² With isolated contacts

Note: Green/yellow wire is physical earth ground.



Bar Chart Examples

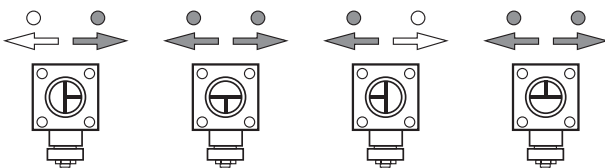
(cam angle is 30 degrees)



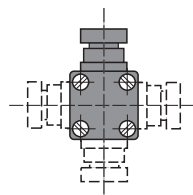
Changeable working heads (E42, E52, E71)

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

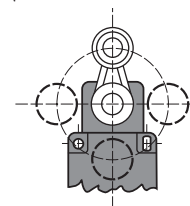
To change position, push in and twist until it locks into place



Positioning - 90° each way



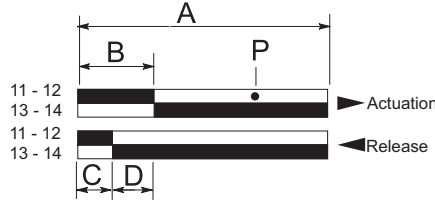
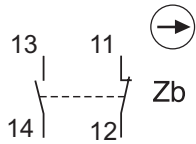
Adjustable lever from 0-360° (6° each increment)



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

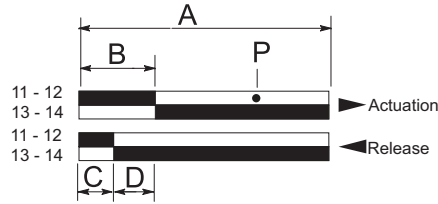
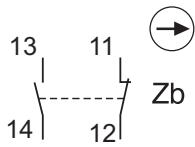
Contact Displacement Values				
Part Series	Displacement Values — mm [in] or degrees			
	A	B	C	P
AEM Halogen				
AEM2G12Z11-HF1	8.7 [0.343]	3.8 [0.150]	2.4 [0.095]	7.5 [0.295]
AEM2G16Z11-HF1	5 [0.197]	2.2 [0.867]	1.4 [0.055]	4.3 [0.169]
AEM2G42Z11-HF1	74°	32°	21°	65°
AEM2G51Z11-HF1	74°	32°	21°	65°
AEM2G71Z11-HF1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