

RUGGED IEC LIMIT SWITCHES FOR PEANUTS

Heavy-duty metal - the most rugged IEC limit switch around

Our IEC metal limit switches feature:

- Die-cast aluminum bodies for heavy-duty industrial applications
- Single and multiple conduit openings save wiring time and money when interconnecting several limit switches
- Conduit openings in ½" NPT or PG13.5 sizes
- Splined actuator shafts for fine adjustment of switch to fit all applications
- Eight different actuators, including roller levers and plungers
- Six interchangeable combinations of contact blocks



Double-insulated plastic IEC limit switch

Double-insulated plastic IEC limit switches feature:

- Electrically-isolated PBT bodies for corrosive environments
- Single conduit openings in ½" NPT or PG13.5 sizes
- Splined actuator shafts for very fine adjustment of switch to fit all applications
- Eight different actuators, including roller levers, plungers, and wobble sticks
- Six interchangeable combinations of contact blocks

Miniature double-insulated plastic IEC limit switch

Miniature double-insulated plastic IEC limit switches feature:

- Small bodies for mounting in tight spaces
- Electrically-isolated PBT body for corrosive environments
- Single conduit openings in ½" NPT or PG11 sizes
- Splined actuator shafts for very fine adjustment of switch to fit all applications
- Eight different actuators, including roller levers, plungers, and wobble sticks
- Six interchangeable combinations of contact blocks



Contact blocks and replacement levers

Contact blocks feature:

- Six types for all applications:
 - Snap-action with 1 N.C. and 1 N.O. contact or 2 N.C. contacts
 - Delayed action with 2 N.O. or 2 N.C. contacts
 - Break before make with 1 N.O. and 1 N.C. contact
 - Make before break with 1 N.O. and 1 N.C. contact
- Compatibility with all Centsable IEC limit switches to minimize spare part inventories
- IP 66 (watertight) rating and individually sealed for long life
- 10 A rating for heavy-duty operation
- Four replacement levers available for ABM and ABP Series

ANATOMY OF AN IEC LIMIT SWITCH

NEMA versus IEC limit switches

In the past, the U.S. market has standardized on NEMA limit switches while the European market has standardized on IEC limit switches. Now, however, the IEC standard is moving heavily into the U.S. market.

The primary difference between NEMA and IEC is the cost. A NEMA limit switch is typically over twice the price of an IEC limit switch. In many rugged applications, such as heavy machinery, foundries, or even mining, the performance of a NEMA limit switch is an absolute must. However, in many applications, such as material handling, ASRS

(automated storage and retrieval systems), an IEC limit switch will perform very well and will save you money.

So remember, take a close look at your application needs and choose the most cost effective limit switch for you.

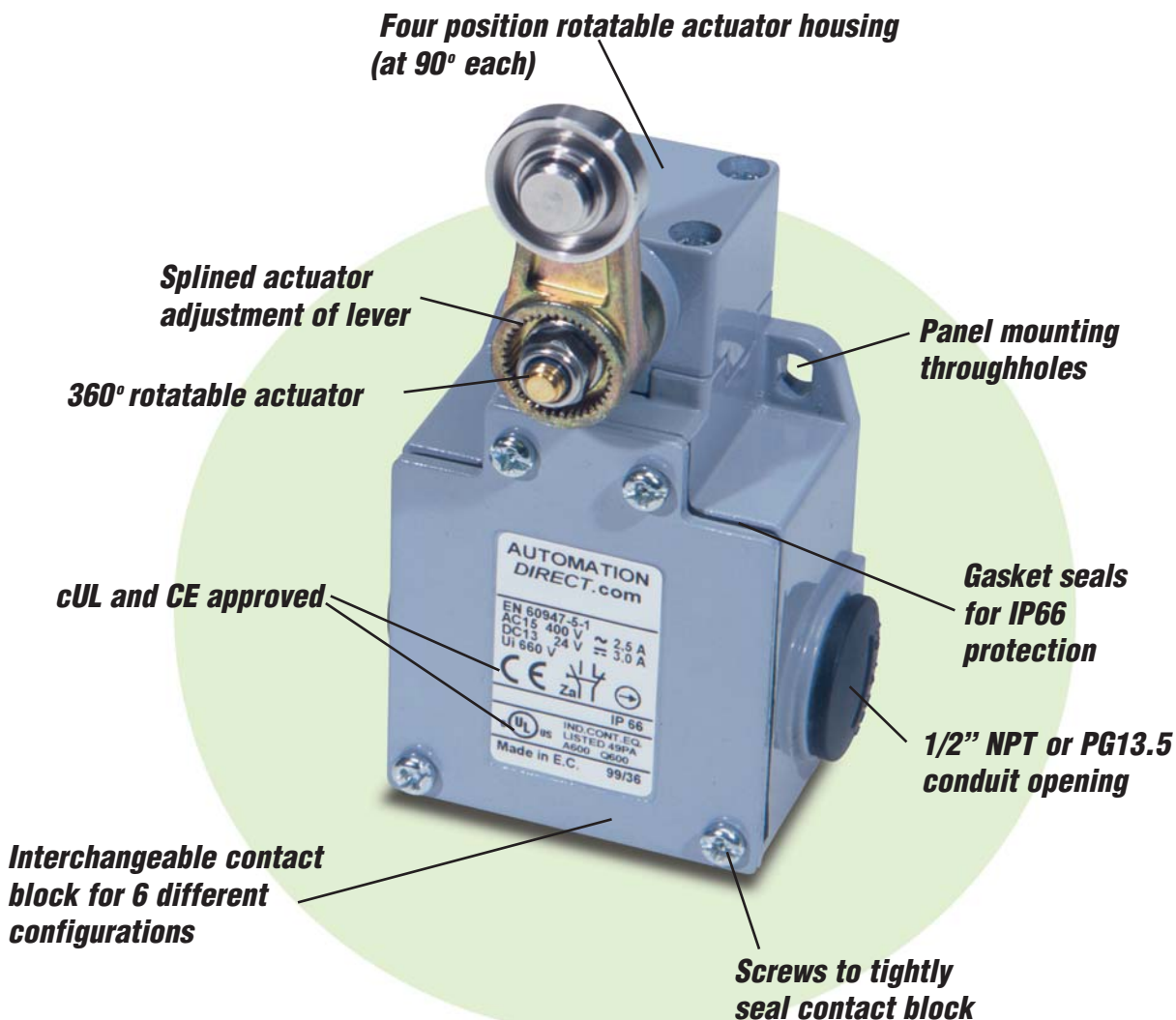
How long does an IEC limit switch last?

Limit switches are involved in physical contact applications that cause wear and tear on the switch. We recognize this concern and supply only the highest quality, longest lasting limit switch.

In addition, don't be fooled by specifications on the mechanical life of a limit switch. Typically, the electrical life of the

contact block is the limiting factor in the overall life of a limit switch. Because of this, we offer replacement contact blocks for a very low price. You shouldn't have to pay a lot to maintain your system in tip top shape.

In evaluating the specification, you will find that the AUTOMATIONDIRECT limit switch has an astounding mechanical life of 30 million operations, while the electrical life is an incredible 5 million operations. Compare this to some competitors' specifications and you'll see the AUTOMATIONDIRECT advantage.



IEC LIMIT SWITCHES SELECTION GUIDE

ABM Series



ABP Series



AAP Series



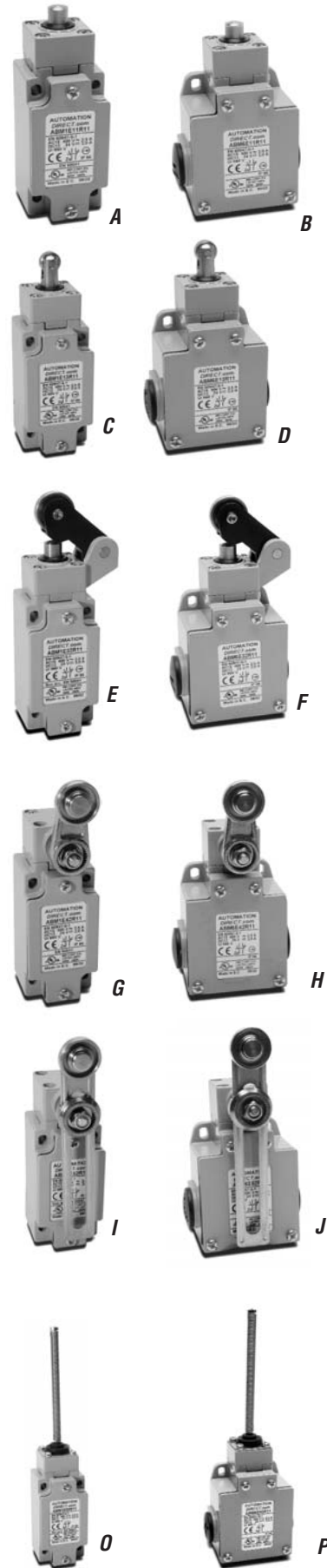
Series	ABM Series	ABP Series	AAP Series
Pricing	check	check	check
Description	Heavy duty IEC	Double-insulated, non-metallic IEC	Double-insulated, non-metallic mini DIN IEC
Material of Construction	Aluminum	PBT (plastic)	PBT (plastic)
Degree of Protection(IEC529)	IEC IP65	IEC IP66	IEC IP66
Maximum Switching Frequency	Contact blocks: all two cycles per second	Contact blocks: all two cycles per second	Contact blocks: all two cycles per second
Mechanical Service Life	25 million cycles	25 million cycles	25 million cycles
Contact Configuration	One snap-action set of N.O. / N.C. contacts. (Optional contact blocks with other configurations are available)	One snap-action set of N.O. / N.C. contacts. (Optional contact blocks with other configurations are available)	One snap-action set of N.O. / N.C. contacts. (Optional contact blocks with other configurations are available)
Conduit Opening	One and three cable holes, PG 13.5 or 1/2 NPT	One cable hole, PG 13.5 or 1/2 NPT	One cable hole, PG 11 or 1/2 NPT
Connection	2x2.5mm ² (AWG14) to 2x0.5mm ² (AWG 18)	2x2.5mm ² (AWG14) to 2x0.5mm ² (AWG 18)	2x2.5mm ² (AWG14) to 2x0.5mm ² (AWG 18)
Agency Approvals	CE markings for applicable CE Directives (CEE 73/23, CEE 93/68, EN60947.1, EN60947.5.1) UL certified (UL508)	CE markings for applicable CE Directives (CEE 73/23, CEE 93/68, EN60947.1, EN60947.5.1) UL certified (UL508)	CE markings for applicable CE Directives (CEE 73/23, CEE 93/68, EN60947.1, EN60947.5.1) UL certified (UL508)

IEC LIMIT SWITCHES

ABM series heavy-duty IEC limit switches

- Featuring a die-cast aluminum body for heavy-duty industrial applications
- Single and multiple conduit openings to save wiring time and money when interconnecting several limit switches
- Conduit openings in 1/2" NPT or PG13.5
- Splined actuator shaft allows very fine adjustment of switch to fit all applications
- Choose from eight different actuators including roller levers and plungers
- Choose from six interchangeable combinations of contact blocks

ABM Series						
Part Number	Price	Actuator Type	Number of Conduit Openings	Conduit Threads	Dimensions: Body / Head	Photo
ABM1E11Z11	check	Stainless steel plunger	One cable hole	PG13.5 threads	Figures 1, 5	A
ABM2E11Z11	check		One cable hole	1/2" NPT threads	Figures 1, 5	A
ABM5E11Z11	check		Three cable holes	PG13.5 threads	Figures 2, 5	B
ABM6E11Z11	check		Three cable holes	NPT threads	Figures 2, 5	B
ABM1E13Z11	check	Stainless steel plunger with roller	One cable hole	PG13.5 threads	Figures 1, 6	C
ABM2E13Z11	check		One cable hole	1/2" NPT threads	Figures 1, 6	C
ABM5E13Z11	check		Three cable holes	PG13.5 threads	Figures 2, 6	D
ABM6E13Z11	check		Three cable holes	1/2" NPT threads	Figures 2, 6	D
ABM1E32Z11	check	One-way lever with stainless steel roller	One cable hole	PG13.5 threads	Figures 1, 7	E
ABM2E32Z11	check		One cable hole	1/2" NPT threads	Figures 1, 7	E
ABM5E32Z11	check		Three cable holes	PG13.5 threads	Figures 2, 7	F
ABM6E32Z11	check		Three cable holes	1/2" NPT threads	Figures 2, 7	F
ABM1E42Z11	check	Rotary lever with stainless steel roller (See accessories for optional roller and actuator levers)	One cable hole	PG13.5 threads	Figures 1, 8	G
ABM2E42Z11	check		One cable hole	1/2" NPT threads	Figures 1, 8	G
ABM5E42Z11	check		Three cable holes	PG13.5 threads	Figures 2, 8	H
ABM6E42Z11	check		Three cable holes	1/2" NPT threads	Figures 2, 8	H
ABM1E52Z11	check	Adjustable rotary lever w/ stainless steel roller (See accessories for optional roller and actuator levers)	One cable hole	PG13.5 threads	Figures 1, 9	I
ABM2E52Z11	check		One cable hole	1/2" NPT threads	Figures 1, 9	I
ABM5E52Z11	check		Three cable holes	PG13.5 threads	Figures 2, 9	J
ABM6E52Z11	check		Three cable holes	NPT threads	Figures 2, 9	J
ABM1E71Z11	check	Adjustable rotary lever w/ stainless steel rod	One cable hole	PG13.5 threads	Figures 1, 10	K
ABM2E71Z11	check		One cable hole	1/2" NPT threads	Figures 1, 10	K
ABM5E71Z11	check		Three cable holes	PG13.5 threads	Figures 2, 10	L
ABM6E71Z11	check		Three cable holes	1/2" NPT threads	Figures 2, 10	L
ABM1E92Z11	check	Wobble lever w/ polyamide tip stainless steel spring	One cable hole	PG13.5 threads	Figures 1, 11	M
ABM2E92Z11	check		One cable hole	1/2" NPT threads	Figures 1, 11	M
ABM5E92Z11	check		Three cable holes	PG13.5 threads	Figures 2, 11	N
ABM6E92Z11	check		Three cable holes	1/2" NPT threads	Figures 2, 11	N
ABM1E93Z11	check	Wobble lever w/stainless steel spring	One cable hole	PG13.5 threads	Figures 1, 12	O
ABM2E93Z11	check		One cable hole	1/2" NPT threads	Figures 1, 12	O
ABM5E93Z11	check		Three cable holes	PG13.5 threads	Figures 2, 12	P
ABM6E93Z11	check		Three cable holes	1/2" NPT threads	Figures 2, 12	P



IEC LIMIT SWITCHES

ABP series double insulated limit switches

- Featuring an electrically isolated PBT body for corrosive environments
- Single conduit openings in 1/2" NPT or PG13.5
- Conduit openings splined actuator shaft allows very fine adjustment of switch to fit all applications
- Choose from eight different actuators including roller levers, plungers, and wobble sticks
- Choose from six interchangeable combinations of contact blocks

ABP Series						
Part Number	Price	Actuator Type	Number of Conduit Openings	Conduit Threads	Dimensions: Body / Head	Photo
ABP1H14Z11	check	Galvanized steel plunger	One cable hole	PG13.5 threads	Figures 3, 5	A
ABP2H14Z11	check		One cable hole	1/2" NPT threads	Figures 3, 5	A
ABP1H19Z11	check	Galvanized steel plunger with roller	One cable hole	PG13.5 threads	Figures 3, 6	B
ABP2H19Z11	check		One cable hole	1/2" NPT threads	Figures 3, 6	B
ABP1H35Z11	check	One-way lever with polyamide roller	One cable hole	PG13.5 threads	Figures 3, 7	C
ABP2H35Z11	check		One cable hole	1/2" NPT threads	Figures 3, 7	C
ABP1H41Z11	check	Side rotary lever with polyamide roller	One cable hole	PG13.5 threads	Figures 3, 8	D
ABP2H41Z11	check		One cable hole	1/2" NPT threads	Figures 3, 8	D
ABP1H51Z11	check	Side rotary adjustable lever with polyamide roller	One cable hole	PG13.5 threads	Figures 3, 9	E
ABP2H51Z11	check		One cable hole	1/2" NPT threads	Figures 3, 9	E
ABP1H71Z11	check	Side rotary with stainless steel rod	One cable hole	PG13.5 threads	Figures 3, 10	F
ABP2H71Z11	check		One cable hole	1/2" NPT threads	Figures 3, 10	F
ABP1H92Z11	check	Wobble lever w/ polyamide tip stainless steel spring	One cable hole	PG13.5 threads	Figures 3, 11	G
ABP2H92Z11	check		One cable hole	1/2" NPT threads	Figures 3, 11	G
ABP1H93Z11	check	Wobble lever w/ stainless steel spring	One cable hole	PG13.5 threads	Figures 3, 12	H
ABP2H93Z11	check		One cable hole	1/2" NPT threads	Figures 3, 12	H



A



B



C



D



E



F



G



H

IEC LIMIT SWITCHES

AAP series miniature DIN limit switches

- Small body allows mounting in tight spaces
- Featuring an electrically isolated PBT body for corrosive environments
- Single conduit openings in 1/2" NPT or PG11
- Splined actuator shaft allows very fine adjustment of switch to fit all applications
- Choose from 8 different actuators including roller levers, plungers, and wobble sticks
- Choose from 6 interchangeable combinations of contact blocks

AAP Series						
Part Number	Price	Actuator Type	Number of Conduit Openings	Conduit Threads	Dimensions Body/Head	Photo
AAP2T14Z11	check	Mini w/ galvanized steel plunger	One cable hole	PG11 threads with a 1/2" NPT adapter	Figures 4, 13	A
AAP2T13Z11	check	Mini w/ galvanized steel plunger with roller	One cable hole	PG11 threads with a 1/2" NPT adapter	Figures 4, 14	B
AAP2T35Z11	check	Mini w/ one-way lever with polyamide roller	One cable hole	PG11 threads with a 1/2" NPT	Figures 4, 15	C
AAP2T41Z11	check	Mini side rotary with polyamide roller	One cable hole	PG11 threads with a 1/2" NPT adapter	Figures 4, 16	D
AAP2T51Z11	check	Mini side rotary adjustable lever with polyamide roller	One cable hole	PG11 threads with a 1/2" NPT adapter	Figures 4, 17	E
AAP2T71Z11	check	Mini side rotary with steel rod	One cable hole	PG11 threads with a 1/2" NPT adapter	Figures 4, 18	F



A



B



C



D



E



F



IEC LIMIT SWITCHES ACCESSORIES

Replacement contact blocks

Easily-installed replacement contact blocks fit both heavy-duty IEC and double-insulated limit switches, including mini-DIN models.



Note: Limit switches come standard with snap-action contacts (AGZ11-SWITCH.) To replace contact block, remove limit switch cover. Carefully remove old contact block and install replacement. Contact blocks are supplied with an adapter to fit into larger ABM and ABP switches. Remove this adapter when installing contacts in mini-DIN AAP models.

Replacement Contact Blocks			
Part Number	Price	Contact Type	Action
AGZ11-SWITCH	check	Snap action 1 N.C. and N.O.	3ms change-over time
AGZ02-SWITCH	check	Snap action 2 N.C.	3ms change-over time
AGX11-SWITCH	check	Slow action 1 N.C. and 1 N.O.	Break before make
AGY11-SWITCH	check	Slow action overlay 1 N.C. and 1 N.O.	Make before break
AGW02-SWITCH	check	Slow action delay 2 N.C.	Simultaneous
AGW20-SWITCH	check	Slow action overlay 2 N.O.	Simultaneous

Additional lever arms, spare parts and accessories

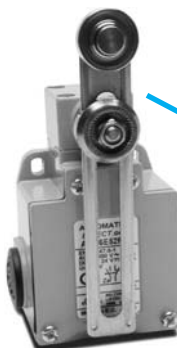
Additional Lever Arms/Spare Parts and Accessories		
Part Number	Price	Actuator Type
AGE42-LEVER	check	Lever with stainless steel roller for E42 models
AGE44-LEVER	check	Lever with rubber roller for E42 models
AGE52-LEVER	check	Lever with stainless steel roller for E52 models
AGE54-LEVER	check	Lever with rubber roller for E52 models
AGZ11-SWITCH	check	Contact block, snap action, 1 N.O. and 1 N.C. contact, for Centsable switches
AGZ02-SWITCH	check	Contact block, snap action, 2 N.C. contacts, for Centsable switches
AGX11-SWITCH	check	Contact block, slow action, delay, 1 N.O. and 1 N.C. contact, for Centsable switches
AGY11-SWITCH	check	Contact block, slow action, overlay, 1 N.O. and 1 N.C. contact, for Centsable switches
AGW02-SWITCH	check	Contact block, slow action, delay, 2 N.C. contacts, for Centsable switches
AGW20-SWITCH	check	Contact block, slow action, overlay, 2 N.O. contacts, for Centsable switches

Note: See the Bar Charts page of this section for more information



Replacement actuator levers for heavy-duty IEC models

Easily-replaceable actuators for E42 and E52 model limit switches. Note: These models have an E42 or E52 in the part number, for example, ABM1E42Z11.



AGE52-LEVER

(Replacement lever shown installed on ABM5E52Z11 limit switch)

AGE44-LEVER

(Lever w/ rubber roller shown)



IEC CONTACT BLOCK SPECIFICATIONS



Approvals		
All: CENELEC EN 50041, CEI EN 60947-5-1 Plastic models: UL (508), CSA C22.2 No 14-M91		
Environmental		
Degree of Protection	Plastic models: IP65 according to IEC 529 Aluminum models: IP65 according to IEC 144-CEI70-1	
Temperature Range	Plastic models: stocking: -30° to 80°C (-22° to 176° F) working: -25° to 70°C (-13° to 158°F) Aluminum models: stocking: -30° to 80°C (-22° to 176°F) working: -10° to 70°C (14° to 158°F); minimum temperatures assume that the atmosphere is free of moisture, which could cause moving parts to freeze up	
Pollution Degree	3	
Mechanical Ratings		
Working Positions	All (although some types of actuator, such as a long, heavy spring with the adjustable actuator fully extended, may not work properly if installed in a horizontal position) (Actuators can be rotated in 90° increments)	
Mechanical Life	Straight line working heads: 30 million operations, side rotary heads: 25 million operations, multidirectional heads: 10 million operations	
Enclosure Material	Plastic models: fiberglass-reinforced plastic-V0 class (UL94); aluminum models: die cast aluminum	
Contact Blocks Rating		
Positive Opening*	Yes, all models	
Maximum Switching Frequency	Contact blocks: all two cycles per second	
Repeat Accuracy	0.01mm on the operating points at 1 million operations	
Short-Circuit Protection	Cartridge fuses gl. 10A-500V 10.3x38 1 100KA	
Contact Resistance	≥ 25 milli ohms	
Recommended Minimum Operating Speed	With snap-action contacts: 20 mm per minute** With slow-action contacts: 500 mm per minute***	
Rated Insulation Voltage	660V	
Terminals Marking	According to CENELEC EN 50013	
Wiring Connections	2 x 2.5mm ² (AWG14) to 2 x 0.5mm ² (AWG18)	
Wiring Terminal Type	Captive screw with self-lifting pressure plate	
Wiring Terminal Markings	According to CENELEC EN50013	
User Protection	Double insulation (plastic models only)	
Contact Blocks Performance		
Operation Frequency	3600 ops/h	
Working Factor	0.5	
Usage Class	AC15	24VAC: 10A, 130VAC: 6.5A, 230VAC: 4A, 400VAC: 2.5A
	DC13	24VDC: 1.5A, 110VDC: 0.5A
Tools Needed		
Phillips screwdriver, #1 #2 / Hex wrench, 10mm		
<p>* Positive opening in a snap-action contact block is performed by a rigid mechanism that forces the N.C. contact to open in case the snap action mechanism fails. This would provide protection if, for example, the contacts became "welded" together by excessive current rush. Generally, positive opening is not considered to work properly on switches with actuators that are not a solid design (such as a spring or rubber roller), despite the fact that the contact block itself has positive opening. In order to be considered as having positive opening, a switch must not have flexible components between actuator actioning points and the electrical contact.</p> <p>** This is the speed at which snap-action contact blocks are tested. There is no minimum operating speed for snap-action contacts because the speed has no influence on the switch action. When using spring actuators, the change-over time may vary from 1 to 3 ms from max. to min. operating speed.</p> <p>*** Slow-action contacts must not be operated at very low speeds because of the tendency to maintain the arc if contacts are not rapidly separated.</p>		

IEC LIMIT SWITCHES BAR CHARTS

Bar charts

Limit switch types

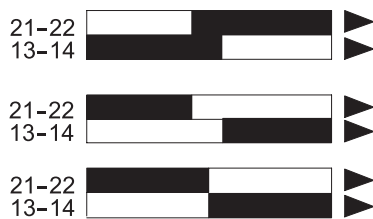
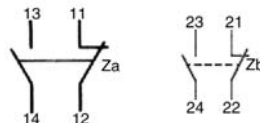
Snap action contact: A contact element in which the contact motion is independent of the speed of the actuator. This feature ensures reliable electrical performance even in applications involving very slow moving actuators.

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.



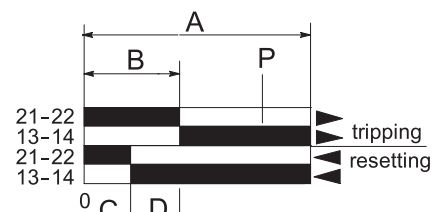
Make-before-break (overlapping) SPDT: the N.O. contact closes before the N.C. contact opens.

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

Simultaneous make and break SPDT: the N.C. contact opens at the same time as the N.O. contact closes.

Terminal Markings	
European	
Terminal No.	Type
11-12	N.C. contact of pole no. 1 ¹
13-14	N.O. contact of pole no. 1 ¹
21-22	N.C. contact of pole no. 2 ²
13-14	N.O. contact of pole no. 2 ²

¹ With non-isolated contacts ² With isolated contacts



□ = Contact open

■ = Contact closed

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

B = Tripping travel of the contact

C = Resetting travel of the contact

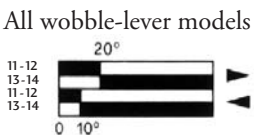
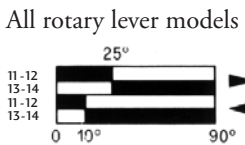
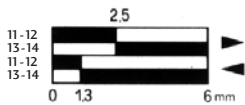
D = Differential travel (B - C)

P = Point from which positive opening is assured

Note: All bar charts are for standard models with snap-action contacts

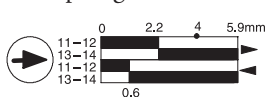
Heavy-duty IEC models

Plunger and one-way lever models

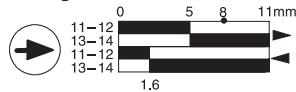


Double-insulated models

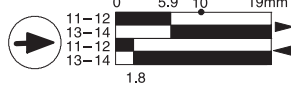
Steel plunger models



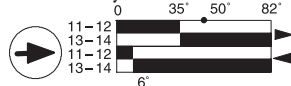
Plunger with roller models



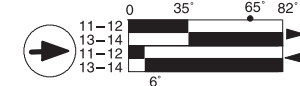
One-way lever models



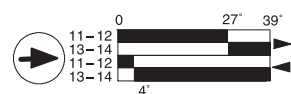
Side rotary models



Steel rod models

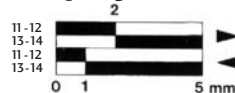


Wobble lever models

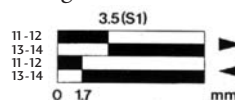


Mini DIN models

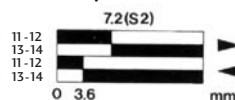
Steel plunger models



Plunger with roller models



One-way lever models

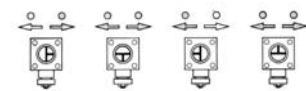


Side rotary models

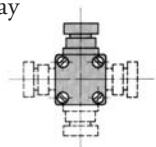


Changeable working heads (E42,E52,E71) models; view from the bottom

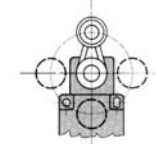
To change position, push in and twist until it locks into place



Positioning - 90° each way



Adjustable lever from 0-360°, 6° each increment



IEC LIMIT SWITCHES DIMENSIONS

Switch body dimensions

Dimensions are in millimeters. 25.4 mm = 1 inch
 For example, 30 mm to inches = 30/25.4 = 1.181 inches.

Figure 1: ABM models — single-cable entry style

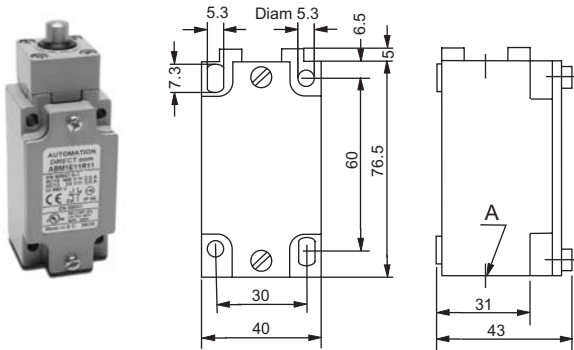


Figure 2: ABM models — 3-cable entry style

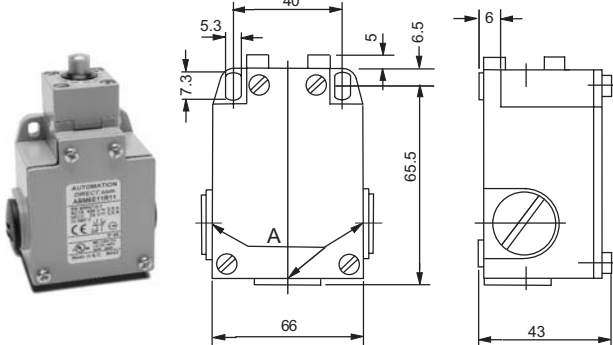


Figure 3: ABP models

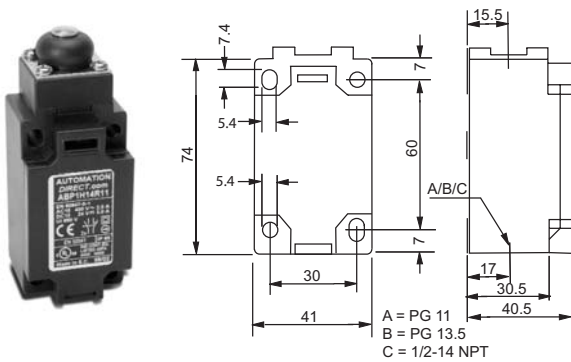
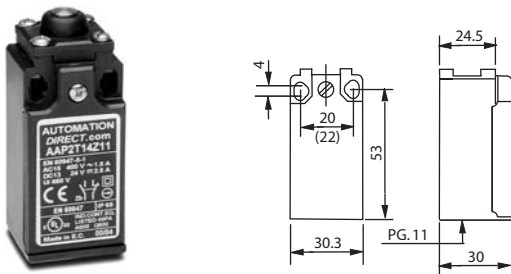


Figure 4: AAP (Mini DIN) models



Actuators - ABM, ABP models

Figure 5: Steel plunger (ABM, ABP models)

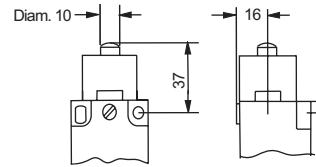


Figure 6: Plunger with roller (ABM, ABP models)

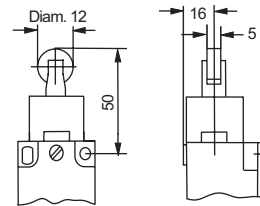


Figure 7: 1-way lever with roller (ABM, ABP models)

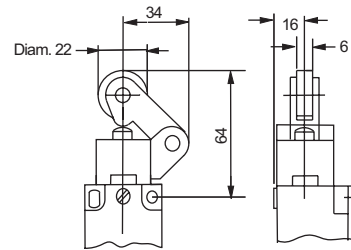


Figure 8: Side rotary with roller (ABM, ABP models)

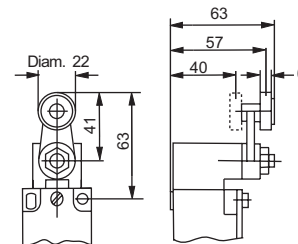
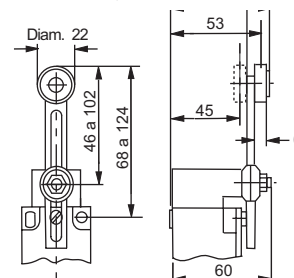


Figure 9: Side rotary with adjustable lever roller (ABM, ABP models)



IEC LIMIT SWITCHES DIMENSIONS

Figure 10: Side rotary with rod (ABM, ABP models)

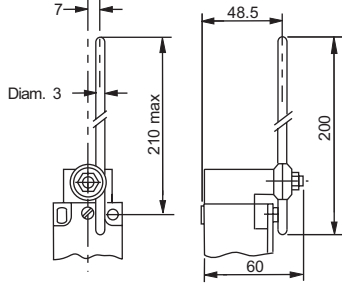


Figure 11: Wobble-type with spring with tip (ABM, ABP models)

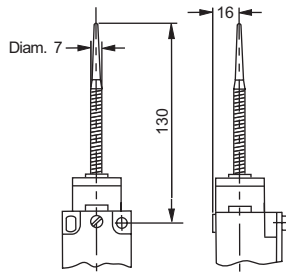
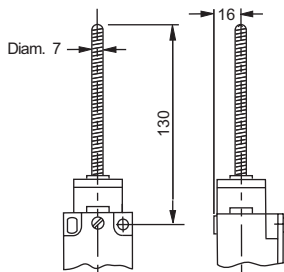


Figure 12: Wobble-type steel spring (ABM, ABP models)



Actuators — mini-DIN (AAP) models

Figure 13: Steel plunger (AAP models)

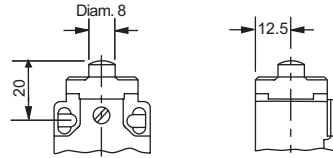


Figure 14: Steel plunger with roller (AAP models)

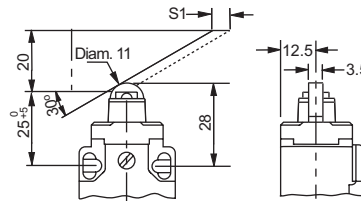


Figure 15: One-way lever with roller (AAP models)

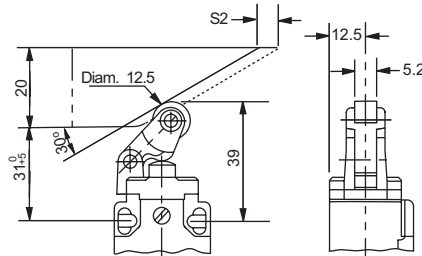


Figure 16: Side rotary lever with roller (AAP models)

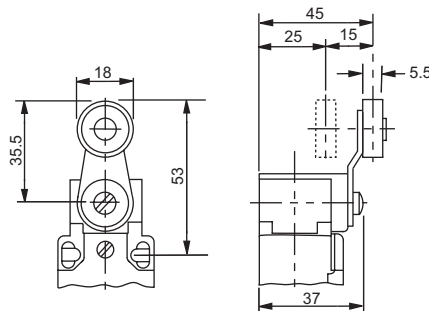


Figure 17: Side rotary lever with adj. lever roller (AAP models)

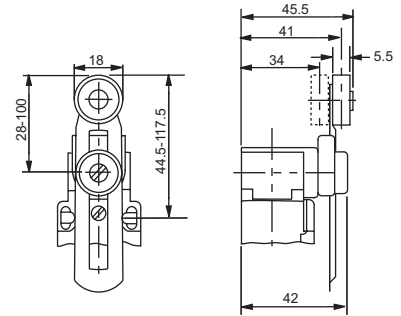
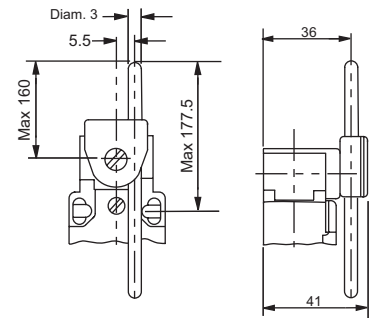


Figure 18: Side rotary lever with rod actuator (AAP models)



Dimensions are in millimeters (25.4 mm = 1 inch). For example, 30 mm to inches = 30/25.4 = 1.181 inches.