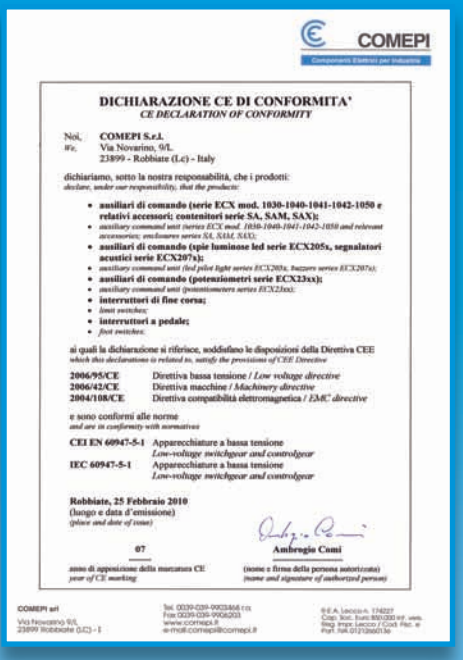
COMEPI

LIMIT SWITCHES
FOOT SWITCHES

Quality certifications



As ever watchful for quality, since 1998, Comepi is qualified ISO 9002 thus offering its domestic and foreign interlocutors a deeper warranty of its ability to adequately answer the ever increasing need of effective and fruitful relationship.

The update to ISO 9001:2008, made in 2009, confirms the Comepi quality politics. The control of full application of ISO 9000 norms and its timely updating is guaranteed by well tested procedures ranging from control of the process up to the use of statistic techniques.

Comepi personnel, at any given level, is involved in this process in order to achieve the highest end-user satisfaction besides growth of image, competitiveness and profits for the firm.

Limit Switches and Foot Switches

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Limit Switches

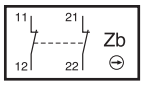
Selection Table

Safety Limit Switches

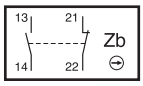
Foot Switches

SUMMARY LIMIT SWITCHES

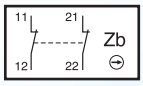
Z02: Snap action 2NC



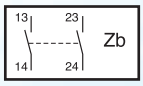
Z11: Snap action 1NO+1NC



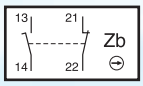
W02: Simultaneous slow action 2NC



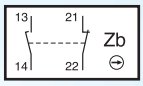
W20: Simultaneous slow action 2NO



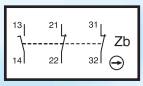
X11: Slow action break before make 1NO+1NC



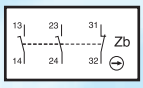
Y11: Slow action make before break 1NO+1NC



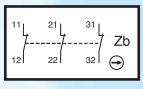
X12P: Slow action break before make 1NO+2NC



X21P: Slow action break before make 2NO+1NC



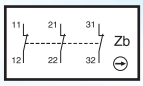
W03P: Simultaneous slow action 3NC



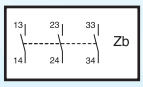
Adapter G Type

Contact blocks
Zb type: double break, electrically separated
Approvals: UL 508 / CSA C22-2 n. 14

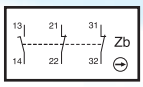
W03: Simultaneous slow action 3NC



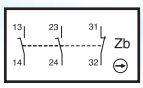
W30: Simultaneous slow action 3NO

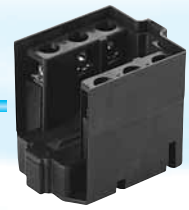


X12: Slow action break before make 1NO+2NC



X21: Slow action break before make 2NO+1NC





AP series (Plastic)

T head type (Plastic)

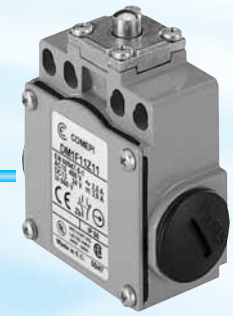
DP series (Plastic)

T head type (Plastic)

AM series (Metal)

F head type (Metal)
T head type (Plastic)

DM series (Metal)



F head type (Metal)
T head type (Plastic)

BP series (Plastic)

H head type (Plastic)

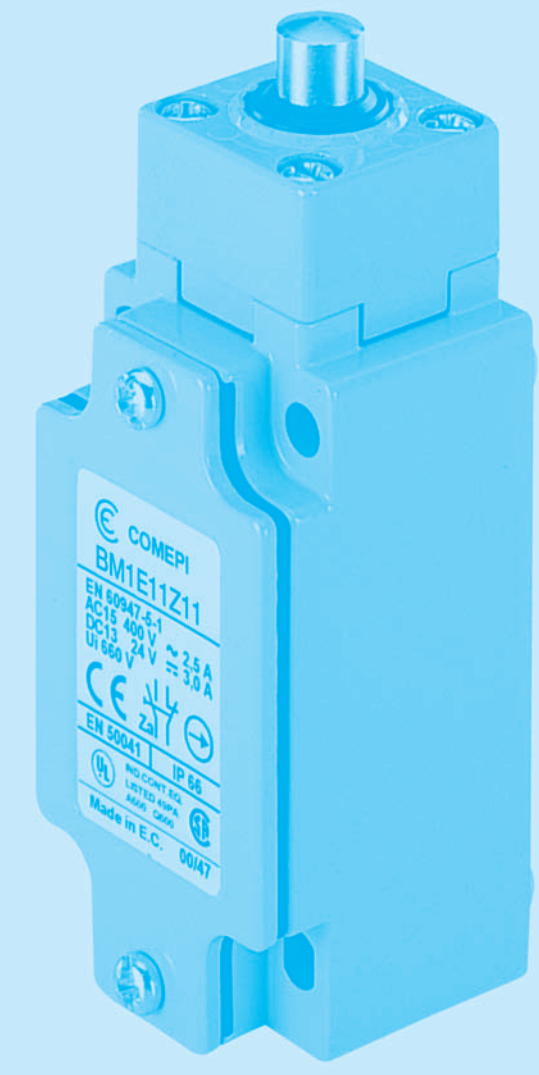
BM series (Aluminium)

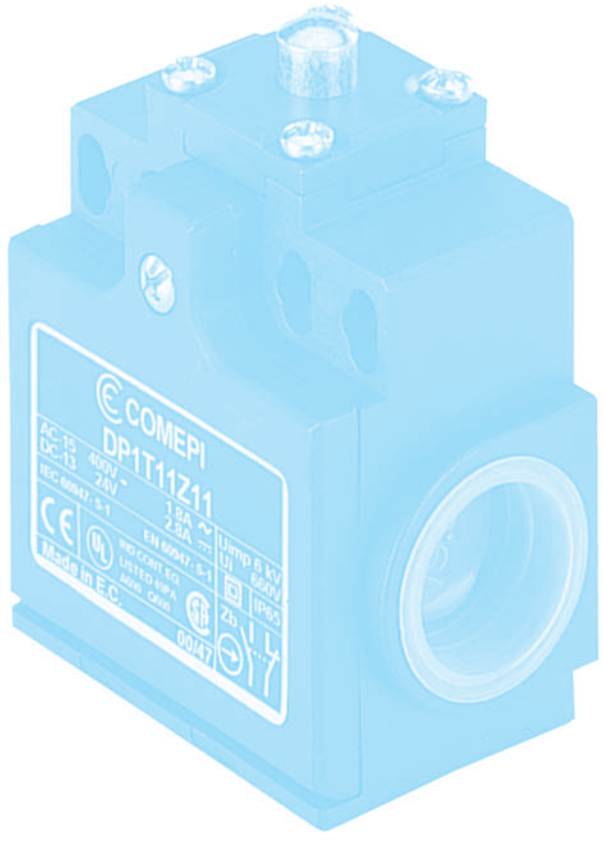
E head type (Aluminium)

Serie CM (alluminio)

E head type (Aluminium)

LIMIT SWITCHES





General Technical Data

Specifications, Directives and Standards

The **Comepi** products listed in this catalogue are developed and manufactured according to the rules set out in IEC international publications and EN European standard.

Specifications

- **International Specifications**
  The International Electrotechnical Commission, IEC, which is part of the International Standards Organization, ISO, publishes IEC publications which act as a basis for the world market.
- **European Specifications**
  The European Committee for Electrotechnical Standardisation (CENELEC), grouping 18 European countries, publishes EN standards for low voltage industrial apparatus.
  These European standards differ very little from IEC international standards and use a similar numbering system. The same is true of national standards. Contradicting national standards are withdrawn.
- **Harmonised European Specifications**
  The European Committees for Standardisation (CEN and CENELEC), grouping 18 European countries, publish EN standards relating to safety of machinery.
- **Specifications in Canada and the USA**
  These are equivalent, but differ markedly from IEC, UTE, VDE and BS specifications.
  UL Underwriters Laboratories (USA)
  CSA Canadian Standards Association (Canada)

Remark concerning the label issued by the UL (USA). Two levels of acceptance between devices must be distinguished.

"Recognized" Authorised to be included in equipment, if the equipment in question has been entirely mounted and wired by qualified personnel. They are not valid for use as "General purpose products" as their possibilities are limited.
They bear the mark:

"Listed" Authorised to be included in equipment and for separate sale are "General purpose products" components in the USA.
They bear the mark:

European Directives

The guarantee of free movement of goods within the European Community assumes elimination of any regulatory differences between the member states. European Directives set up common rules that are included in the legislation of each state while contracditory regulations are cancelled.

There are three main directives:

- **Low Voltage Directive 2006/95/CE** concerning electrical equipment from 50 to 1000 V a.c. and from 75 to 1500 V d.c.
  This specifies that compliance with the requirements that is sets out **is acquired** once the equipment conforms to the standards harmonised at European level: EN 60947-1 and EN-60947-5-1 for **limit switches.**
- **Machines Directives - 2006/42/CE** defining main safety and health requirements concerning design and manufacture of the machines and other equipment including safety components in European Union countries.
- **Electromegnetic Compatibility Directive 2004/108/CE** concerning all electrical devices likely to create electromagnetic disturbances.

Signification of CE marking:

CE marking must not be confused with a quality label.
CE marking placed on a product is proof of conformity with the European Devices concerning the product.
CE marking is part of an administrative procedure and guarantees free movement of the product within the European Community.

Standards

- **International Standards**

IEC 947-1	Low-voltage switchgear and controlgear - Part 1: General Rules (CEI EN 60947-1).
IEC 947-5-1	Low-voltage switchgear and controlgear - Part 5: Control circuit devices and switching elements - Section 1: Electromechanical control circuit devices (CEI EN 60947-5-1) - Chapter 3: Special requirements for control switches with positive opening operation.
IEC 204-1	Electrical equipment on industrial machines - Part 1: General requirements (CEI EN 60204-1).
IEC 204-2	Electrical equipment on industrial machines - Part 2: Item designation and examples of drawings, diagrams, tables and instructions.
IEC 529	Degrees of protection provided by enclosure (IP code) (CEI EN 60529).

- **European Standards**

EN 50005	Low-voltage switchgear and controlgear for industrial use - Terminal marking and distinctive number: General rules (CEI 17-17).
EN 50013	Low-voltage switchgear and controlgear for industrial use - Terminal marking and distinctive number for particular control swithches (CEI 17-17).
EN 50041	Low-voltage switchgear and controlgear for industrial use - Control switches - Position switches 42,5 x 80 - Dimensions and characteristics.
EN 50047	Low-voltage switchgear and controlgear for industrial use - Control switches - Position switches 30 x 55 - Dimensions and characteristics.
EN 60947-1	Low-voltage switchgear and controlgear for industrial use - Part 1: General rules (CEI EN 60947-1).
EN 60947-5-1	Low-voltage switchgear and controlgear for industrial use - Part 5: Control circuit devices and switching elements - Section 1: Electromechanical control circuit devices (CEI EN 60947-5-1) - Chapter 3: Special requirements for control switches with positive opening operation.
EN 60529	Degrees of protection provided by enclosures (IP code).
EN 61058-1	Switches for appliances. Part. 1: general requirements.

- **American Standards**

UL 508	Standard for safety. Industrial control equipment.
CSA - C22.2 No. 14-95	Industrial control equipment. Industrial products.

Double Insulation ⧈

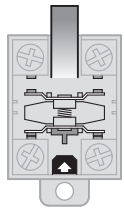
Class II materials, according to IEC 536, are designed with double insulation. This measure consists in doubling the functional insulation with an additional layer of insulation so as to eliminate the risk of electric shock and thus not having to protect elsewhere. No conductive part of "double insulated" material should be connected to a protective conductor.

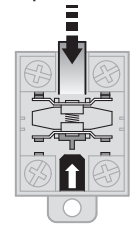
Positive Opening Operation ⊖

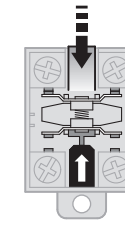
A control switch, with one or more break-contact elements, has a positive opening operation when the switch actuator ensures full contact opening of the break-contact. For the part of travel that separates the contacts, there must be a positive drive, with no resilient member (e.g. springs), between the moving contacts and the point of the actuator to which the actuating force is applied.
The positive opening operation does not deal with N.O. contacts.
Control switches with positive opening operation may be provided with either snap action or slow action contact elements. To use several contacts on the same control switch with positive opening operation, they must be electrically separated from each other, if not, only one may be used.
Every control switch with positive opening operation must be indelibly marked on the outside with the symbol: ⊖ .

Snap Action

Snap action contacts are characterised by a release position that is distinct from the operating position (differential travel). Snap breaking of moving contacts is independent of the switch actuator's speed and contributes to regular electric performance even for slow switch actuator speeds.

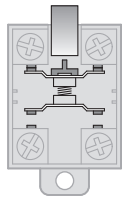

State of rest

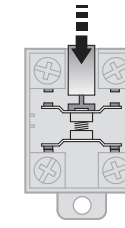

Contact change


Positive opening

Slow Action

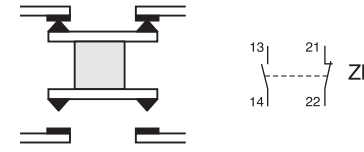
Slow action contacts are characterised by a release position that is the same as the operating position. The switch actuator's speed directly conditions the travel speed of contacts.


State of rest


Completely closed

Contact shape according to IEC 947-5-1.
Change-over contact elements with 4 terminals must be indelibly marked with the corresponding Za or Zb symbol as in the diagrams below.

Contacts with the same polarity



The 2 moving contacts are electrically separated

Utilization Category

AC-15: switching of electromagnetic loads of electromagnets using an alternating current (>72 VA).
DC-13: switching of electromagnets using a direct current.

Terminals

Limit switches with metal casings must have a terminal, for a protective conductor, that is placed inside the casing very close to the cable inlet and must be indelibly marked.

Minimum Actuation Force/Torque

The minimum amount of force/torque that is to be applied to the switch actuator to produce a change in contact position.

Minimum Force/Torque to achieve Positive Opening Operation

The minimum amount of force/torque that is to be applied to the switch actuator to ensure positive opening operation of the N.C. contact.

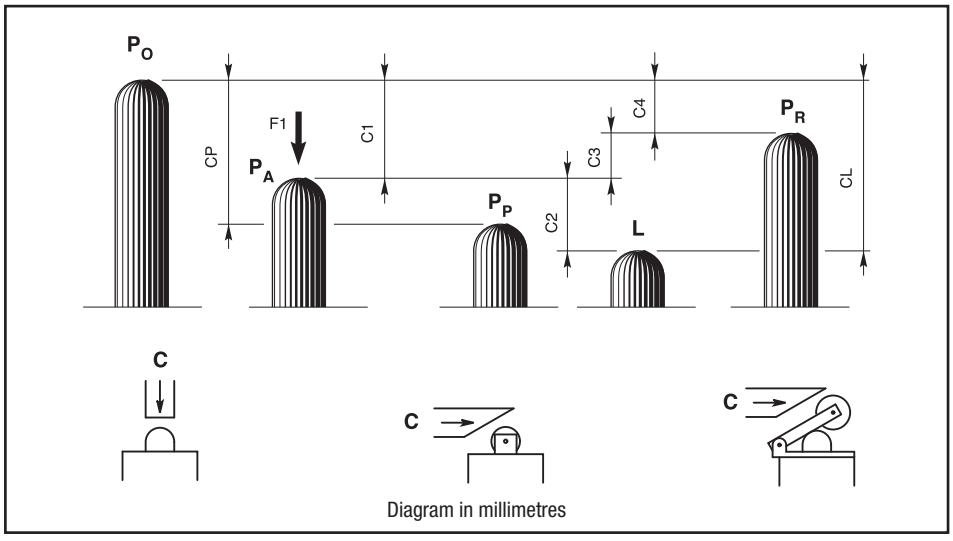


Diagram in millimetres

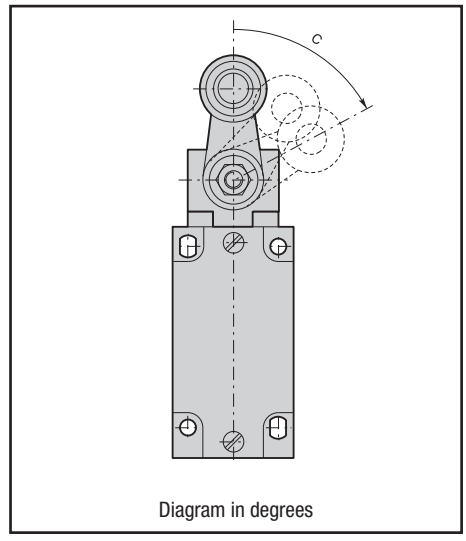


Diagram in degrees

P_0 Free position:
position of the switch actuator when no external force is exerted on it.

P_A Operating position:
position of the switch actuator, under the effect of force F1, when the contacts leave their initial free position.

P_P Positive opening position:
position of the switch actuator from which positive opening is ensured.

L Max. travel position:
maximum acceptable travel position of the switch actuator under the effect of a force F1.

P_R Release position:
position of the switch actuator when the contacts return to their initial free position.

C_1 Pre-travel:
distance between the free position P_0 and the operating position P_A.

C_P Positive opening travel:
minimum travel of the switch actuator, from the free position, to ensure positive opening operation of the normally closed contact.

C_2 Over-travel:
distance between the operating position P_A and the max. travel position L.

C_L Max. travel:
distance between the free position P_0 and the max. travel position L.

C_3 Differential travel (C1-C4):
travel difference of the switch actuator between the operating position P_A and the release position P_R.

C_4 Release travel:
distance between the release position P_R and the free position P_0.

Diagram for snap action contacts:

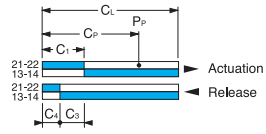
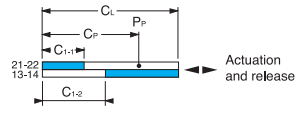


Diagram for non-overlapping slow action contacts:



Note: for slow action contacts, $C_3 = 0$, C_{1-1} = pre-travel of contact 21-22, C_{1-2} = pre-travel of contact 13-14

Examples:

BM1E13Z11
(snap action contacts)

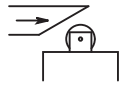
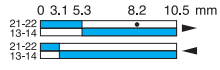


Diagram in millimetres/cam travel



BM1E41Z11
(snap action contacts)

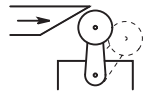
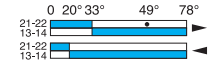


Diagram in degrees/lever rotation



BM1E11X11
(non-overlapping slow action contacts)

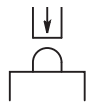
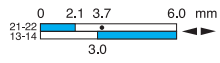


Diagram in millimetres/plunger travel



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AP... / BP... / DP... Limit Switches

Double Insulation - Plastic Casing IP65

Description

Applications

Easy to use, electromechanical limit switches offer specific qualities:

- Visible operation.
- Able to switch strong currents (10 A conventional thermal current).
- Electrically separated contacts.
- Precise operating points (consistency).
- Immune to electromagnetic disturbances.

They are purpose-built detection devices thanks to these characteristics:

- Presence/absence.
- Positioning and travel limit.
- Objects passing/counting.

Description

Limit switches, which are made of reinforced UL-VO thermoplastic fiber-glass, offer double insulation ⧈ and a degree of protection of IP65.

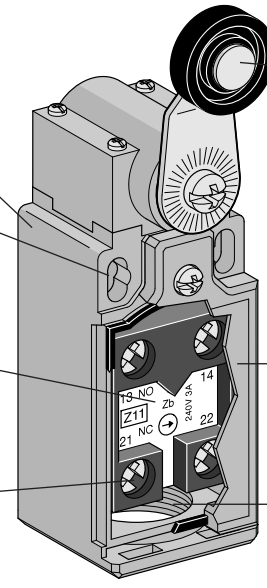
The casing come in 3 dimension: – AP... 30 mm. width – BP... 40 mm. width – DP... 50 mm. width

Casing
- 30 mm. width with standardized dimensions acc. to EN 50047
- 40 mm. width with standardized dimensions acc. to EN 50041
- 50 mm. width

Mounting the casing
- 2 x M4 screws on top part for 30 mm. width
- 2 or 4 x M5 screws for 40 mm. width
- 2 or 4 x M4 screws on top part for 50 mm. width

Contact Block:
- Contact configuration: NO + NC, 2 NO, 2 NC, 2NO + 1NC, 1NO + 2NC, 3NC, 3NO (only for BP series)
- Positive opening operation
- Snap action or slow action
- Zb shape: the 2 contacts are electrically separated

Connecting terminals:
- Block of 2 contacts: M3.5 (+, –) pozidriv 2 screw
- Block of 3 contacts: M3 (+, –) screw
- Screw head with captive cable clamp
- Markings conform with IEC 947-1, IEC 947-5-1 EN 50005 and 50013 standards



A variety of operating heads:
- Plain plunger
- Roller plunger
- Roller lever, adjustable or not, etc.

Assembled using 4 x ø 3 screws for 30 and 50 mm width.
Assembled using 4 x ø 4 screws for 40 mm width.

Cover:
- Closed using ø 3 screw for 30 and 50 mm width.
- Self clipping closure for 40 mm width.

One piece sealing gasket to ensure tightness.

Electrical connection:
- 1 x cable gland for AP series
- 1 x cable gland for BP series
- 2 x cable gland for DP series

Symbols

Example:	A	P	1	T	41	Z	1	1
Structure:		P						

Casing width:
A = 30 mm width + 1 cable inlet
B = 40 mm width + 1 cable inlet
D = 50 mm width + 2 cable inlets

Plastic casing

Electrical connection
1: cable inlets for PG13.5 cable gland
2: cable inlets for 1/2 NPT cable gland *
3: cable inlets for PG11 cable gland (only for AP and DP series)
4: cable inlets for M16 x 1,5 cable gland (only for AP and DP series)
5: cable inlets for M20 x 1,5 cable gland

Plastic heads
T: for AP and DP series
H: for BP series only

Operating heads: codes 10 - 9999

Contact block

11: 1 NO + 1 NC contacts
20: 2 NO contacts
02: 2 NC contacts
12P: 1 NO + 2 NC contacts
21P: 2 NO + 1 NC contacts
03P: 3 NC contacts

Only for BP series:
12: 1 NO + 2NC contacts
21: 2 NO + 1 NC contacts
03: 3 NC contacts
30: 3 NO contacts

Z: Zb Snap action
W: Zb Slow action (contact dependent)
X: Zb Slow action non-overlapping late make
Y: Zb Slow action overlapping early make

• **Ordering details** . . . . . page 18 to 40
• **Standards** . . . . . page 4
• **Terminology** . . . . . page 6

** In AP... and DP... series, the 1/2" NPT thread is obtained by the use of a plastic adapter (delivered not mounted).*

General Technical Data

		Plastic Casing
Standards		Devices conform with international IEC 947-5-1 and European EN 60 947-5-1 standards
Certifications - Approvals		UL - CSA - IMQ
Air temperature near the device		
– during operation	°C	– 25 ... + 70
– for storage	°C	– 30 ... + 80
Climatic withstand		According to IEC 68-2-3 and salty mist according to IEC 68-2-11
Mounting positions		All positions are authorised
Shock withstand (according to IEC 68-2-27 and EN 60 068-2-27)		50g* (1/2 sinusoidal shock for 11 ms) no change in contact position
Resistance to vibrations (acc. to IEC 68-2-6 and EN 60 068-2-6)		25g (10 ... 500 Hz) no change in position of contacts greater than 100 µs
Protection against electrical shocks (acc. to IEC 536)		Class II
Degree of protection (according to IEC 529 and EN 60 529)		IP 65
Consistency (measured over 1 million operations)		0.1 mm (upon closing point)
Minimum actuation speed	m/s	Slow action contacts 0.060 / Snap action contacts 0.001

Electrical Data

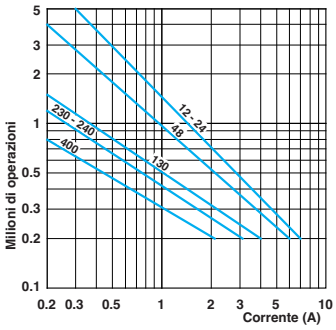
Rated insulation voltage U_i - according to IEC 947-1 and EN 60-947-1 - according to UL 508 and CSA C22-2 n° 14			500 V (degree of pollution 3) (400 V for contacts type X12P, X21P, W03P) A 600, Q 600 (A 300, Q 300 for contacts type X12P, X21P, W03P)
Rated impulse withstand voltage U_{imp} (according to IEC 947-1 and EN 60 947-1)		kV	6
Conventional free air thermal current I_{th} (according to IEC 947-5-1) $\theta < 40$ °C		A	10
Short-circuit protection U_e < 500 V a.c. - gG (gl) type fuses		A	10
Rated operational current			
I_e / AC-15 (according to IEC 947-5-1)	24 V - 50/60 Hz	A	10
	120 V - 50/60 Hz	A	6
	230 V - 50/60 Hz	A	3.1
	240 V - 50/60 Hz	A	3
	400 V - 50/60 Hz	A	1.8
I_e / DC-13 (according to IEC 947-5-1)	24 V - d.c.	A	2.8
	125 V - d.c.	A	0.55
	250 V - d.c.	A	0.27
Switching frequency		Cycles/h	3600
Load factor			0.5
Resistance between contacts		mΩ	25
Connecting terminals			M3.5 (+, –) pozidriv 2 screw with cable clamp (M3 for 3 poles contacts type)
Terminal for protective conductor			–
Connecting capacity		1 or 2 x mm²	0.75 ... 2.5 (0.34... 1.5 for 3 poles contacts type)
Terminal marking			According to EN 50 013
Mechanical durability		Millions of operations	15 AP•T 10...12; 30...34; 38 10 DP•T 13; 41...48; 51...55; 61...75 >5 14; 35; 36; 39; 91...93; 98 30 BP•H 11...13; 31...33 25 41...44; 51...54; 61...75 10 14; 19; 35...37; 91...93
Electrical durability (according to IEC 947-5-1)			Utilization categories AC-15 and DC-13 (Load factor of 0.5 according to curves below)

* except for AP/DP•T42, T52, T5200, T55 and T5500: 25 g.

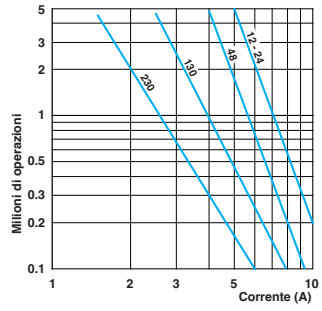
IMQ listed values

For the complete list of approved products, contact our technical department

AC-15 - Snap action



AC-15 - Slow action



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

• **Ordering details** ..... page 18 to 40

AM... / DM... / BM... / CM... Limit Switches

Metal Casing IP66

Description

Applications

Easy to use, electromechanical limit switches offer specific qualities:

- Visible operation.
- Able to switch strong currents (10 A conventional thermal current).
- Electrically separated contacts.
- Precise operating points (consistency).
- Immune to electromagnetic disturbances.

They are purpose-built detection devices thanks to these characteristics:

- Presence/absence.
- Positioning and travel limit.
- Objects passing/counting.

Description

The AM... and DM... series are made of zinc alloy (Zamack). The limit switches BM... and CM... series are realized in aluminium material, therefore they are mechanically more resistant and three times lighter than the ones in zinc alloy. All metal limit switches have a degree protection of IP 66.

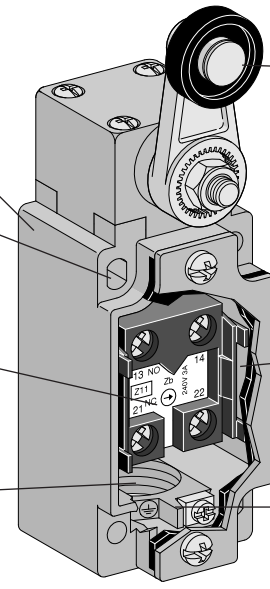
The casing come in 4 dimension: – AM... 30 mm. width – BM... 40 mm. width – DM... 50 mm. width – CM... 60 mm. width

Casing
- 30 mm. width with standardized dimensions acc. to EN 50047
- 40 mm. width with standardized dimensions acc. to EN 50041
- 50 mm. width
- 60 mm. width

Mounting the casing
- 2 x M4 screws on top part for 30 mm. width
- 2 or 4 x M5 screws for 40 mm. width
- 2 or 4 x M4 screws on top part for 50 mm. width
- 2 x M5 screws on top part for 60 mm. width

Contact Block:
- Contact configuration: NO + NC, 2 NO, 2 NC, 2NO + 1NC, 1NO + 2NC, 3NC, 3NO (only for BM and CM series)
- Positive opening operation
- Snap action or slow action
- Zb shape: the 2 contacts are electrically separated

Connecting terminals:
- Block of 2 contacts: M3.5 (+, –) pozidriv 2 screw
- Block of 3 contacts: M3 (+, –) screw
- Screw head with captive cable clamp
- Markings conform with IEC 947-1, IEC 947-5-1 EN 50005 and 50013 standards



A variety of operating heads:
- Plain plunger
- Roller plunger
- Roller lever, adjustable or not, etc.

Assembled using 4 x M3 screws for 30 and 50 mm width.
Assembled using 4 x M4 screws for 40 and 50 mm width.

Cover:
- Closed using 3 x ø 3 screws for 30 mm width.
- Closed using 4 x ø 3 screws for 50 mm width.
- Closed using 2 x ø 4 screws for 40 mm width.
- Closed using 4 x ø 4 screws for 60 mm width.

One piece sealing gasket to ensure tightness.

Electrical connection:
- 1 x cable gland for AM series
- 1 x cable gland for BM series
- 3 x cable gland for CM series
- 3 x cable gland for DM series

Symbols

Example:	B	M	1	E	41	Z	1	1
Structure:		M						

Casing width:
A = 30 mm width + 1 cable inlet
B = 40 mm width + 1 cable inlet
D = 50 mm width + 3 cable inlets
C = 60 mm width + 3 cable inlets

Metal casing

Electrical connection
1: cable inlets for PG13.5 cable gland
2: cable inlets for 1/2 NPT cable gland
3: cable inlets for PG11 cable gland (only for AM and DM series)
4: cable inlets for M16 x 1,5 cable gland (only for AM and DM series)
5: cable inlets for M20 x 1,5 cable gland

Operating heads
T: plastic heads **F:** metal heads . . (AM and DM series)
P: plastic heads **E:** metal heads . . (BM and CM series)

Operating heads: codes 10 - 99

Contact block

11: 1 NO + 1 NC contacts
20: 2 NO contacts
02: 2 NC contacts
12P: 1 NO + 2 NC contacts
21P: 2 NO + 1 NC contacts
03P: 3 NC contacts

Only for BP series:
12: 1 NO + 2NC contacts
21: 2 NO + 1 NC contacts
03: 3 NC contacts
30: 3 NO contacts

Z: Zb Snap action
W: Zb Slow action (contact dependent)
X: Zb Slow action non-overlapping late make
Y: Zb Slow action overlapping early make

• **Ordering details** . . . . . page 30 to 57
• **Standards** . . . . . page 4
• **Terminology** . . . . . page 6

General Technical Data

		Metal Casing
Standards		Devices conform with international IEC 947-5-1 and European EN 60 947-5-1 standards
Certifications - Approvals		UL - CSA - IMQ
Air temperature near the device		
– during operation	°C	– 25 ... + 70
– for storage	°C	– 30 ... + 80
Climatic withstand		According to IEC 68-2-3 and salty mist according to IEC 68-2-11
Mounting positions		All positions are authorised
Shock withstand (according to IEC 68-2-27 and EN 60 068-2-27)		50g* (1/2 sinusoidal shock for 11 ms) no change in contact position
Resistance to vibrations (acc. to IEC 68-2-6 and EN 60 068-2-6)		25g (10 ... 500 Hz) no change in position of contacts greater than 100 µs
Protection against electrical shocks (acc. to IEC 536)		Class I
Degree of protection (according to IEC 529 and EN 60 529)		IP 66**
Consistency (measured over 1 million operations)		0.05 mm (upon closing point)
Minimum actuation speed	m/s	Slow action contacts 0.060 / Snap action contacts 0.001

Electrical Data

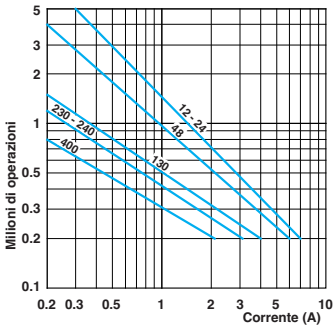
Rated insulation voltage U_i			500 V (degree of pollution 3) (400 V for contacts type X12P, X21P, W03P)
- according to IEC 947-1 and EN 60-947-1			A 600, Q 600 (A 300, Q 300 for AM... and DM... series and contacts type X12P, X21P, W03P)
- according to UL 508 and CSA C22-2 n° 14			
Rated impulse withstand voltage U_{imp} (according to IEC 947-1 and EN 60 947-1)		kV	6
Conventional free air thermal current I_{th} (according to IEC 947-5-1) $\theta < 40$ °C		A	10
Short-circuit protection U_e < 500 V a.c. - gG (gl) type fuses		A	10
Rated operational current			
I_e / AC-15 (according to IEC 947-5-1)	24 V - 50/60 Hz	A	10
	120 V - 50/60 Hz	A	6
	230 V - 50/60 Hz	A	3.1
	240 V - 50/60 Hz	A	3
	400 V - 50/60 Hz	A	1.8
I_e / DC-13 (according to IEC 947-5-1)	24 V - d.c.	A	2.8
	125 V - d.c.	A	0.55
	250 V - d.c.	A	0.27
Switching frequency		Cycles/h	3600
Load factor			0.5
Resistance between contacts		mΩ	25
Connecting terminals			M3.5 (+, –) pozidriv 2 screw with cable clamp (M3 for 3 poles contacts type)
Terminal for protective conductor			M3.5 (+, –) pozidriv 2 screw with cable clamp
Connecting capacity		1 or 2 x mm²	0.75 ... 2.5 (0.34... 1.5 for 3 poles contact type)
Terminal marking			According to EN 50 013
Mechanical durability		Millions of operations	15 AM•F/T 11; 12; 30...34; 38 — 10 DM•F/T 41...46; 51...55; 61...75 — >5 14; 35; 36; 39; 91...93; 98 — 30 BM•E 11...13; 21...23; 31...33 — 25 CM•E 41...44; 51...54; 61...75 — 10 91...93; 99
Electrical durability (according to IEC 947-5-1)			Utilization categories AC-15 and DC-13 (Load factor of 0.5 according to curves below)

* except for AM/DM•F42, F52, F55: 25 g. - ** except for AM/DM•F52, F55, F73, F74 and BM/CM•E54, P92, P93, E92, E93: the degree of protection is IP65

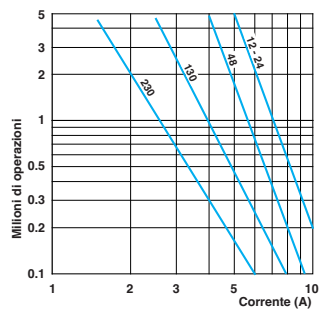
IMQ listed values

For the complete list of approved products, contact our technical department

AC-15 - Snap action



AC-15 - Slow action



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

• **Ordering details** ..... page 30 to 57

Applications

Easy to use, electromechanical limit switches offer specific qualities:

- Visible operation.
- Able to switch strong currents (5 A conventional thermal current).
- Electrically separated contacts.
- Precise operating points (consistency).
- Immune to electromagnetic disturbances.

They are purpose-built detection devices thanks to these characteristics:

- Presence/absence.
- Positioning and travel limit.
- Objects passing/counting.

Description

These limit switches, made in thermoplastic material (EP... series) or diecast zinc alloy (EM... series), sealed with epoxy resin at the base on the box, offer a degree of protection IP67

The casing come in 2 dimensions: – EP1... / EM1... 30 mm. width
– EP2... / EM2... 35 mm. width

Casing
• 30 or 35 mm. width casings

Mounting the casing
• 2 x M4 screws on top part

Contact block
• Contact configuration: 1NO + 1NC
• Positive opening operation
• Snap action or slow action
• Zb shape: the 2 contacts are electrically separated

• Epoxy resin for IP67 protection degree

A variety of operating heads:
• Plain plunger
• Roller plunger
• Roller lever, adjustable or not, etc.
Assembled using 2 x ø 3 screws (EP series)
or 2 x M3 screws (EM series)

Electrical connection:
• cable: PVC 4 x 0,75 mm² (EP..) / 5 x 0,75 mm² (EM...)
• lenght: 1 m (different cables or lenghts page 13)
• optional: M12 connector

Symbols

Example: EM1 | G12 | Z | _

Structure: | | | |

Casing:
EP1 = plastic casing 30 mm width
EP2 = plastic casing 35 mm width
EM1 = metal casing 30 mm width
EM2 = metal casing 35 mm width

Operating heads: codes G11 - G9999

Electrical connection
_ : Standard with cable
M: M12 connector

Contact block
Z: Zb Snap action 1NO + 1NC
X: Zb Slow action non-overlapping late make 1NO + 1NC

• **Ordering details** ..... page 58 to 73
• **Standards** ..... page 4
• **Terminology** ..... page 6

General Technical Data

		Plastic Casing	Metal Casing
Standards		Devices conform with international IEC 947-5-1 and European EN 60 947-5-1 standards	
Certifications - Approvals		UL (upon request)	
Air temperature near the device			
– during operation	°C	– 25 ... + 70	
– for storage	°C	– 40 ... + 70	
Mounting positions		All positions are authorised	
Protection against electrical shocks (acc. to IEC 536)		Class II	Class I
Degree of protection (according to IEC 529 and EN 60 529)		IP 67	
Degree of protection (according to UL50)		Type 1 enclosure ("indoor use only")	Type 4 - 4X - 6 enclosure ("outdoor use - raintight - watertight corrosion resistant")

Electrical Data

Rated insulation voltage U_i - according to IEC 947-1 and EN 60-947-1 - according to UL 508 and CSA C22-2 n° 14			400 V (degree of pollution 3) (250 V for M12 connector) B 300, R 300
Rated impulse withstand voltage U_{imp} (according to IEC 947-1 and EN 60 947-1)		kV	4
Conventional free air thermal current I_{th} (according to IEC 947-5-1) $\theta < 40$ °C		A	5 (4 A for M12 connector)
Short-circuit protection U_e < 500 V a.c. - gG (gl) type fuses		A	6
Rated operational current			
I_e / AC-15 (according to IEC 947-5-1)	24 V - 50/60 Hz	A	5.0 (4 A for M12 connector)
	120 V - 50/60 Hz	A	3.0 (4 A for M12 connector)
	240 V - 50/60 Hz	A	1.5 (4 A for M12 connector)
I_e / DC-13 (according to IEC 947-5-1)	24 V - d.c.	A	1.1 (2.8 A for M12 connector)
	125 V - d.c.	A	0.22
	250 V - d.c.	A	0.1 (0.27 A for M12 connector)
Switching frequency		Cycles/h	3600
Load factor			0.5
Resistance between contacts		mΩ	25
Mechanical durability			10 Millions of operations

Electrical connection:

Standard: 1 m. PVC cable 4 x 0,75 mm² (EP... series)
1 m. PVC cable 5 x 0,75 mm² (EM... series)

On request: All EP.../EM... limit switches can be supplied with different cable types and lenghts according to the following ordering details

Standard CODE [ ] [ ] 0 [ ]

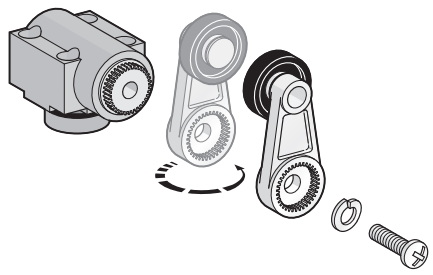
Cable lenght:
020 = 2 m
030 = 3 m
040 = 4 m
050 = 5 m
060 = 6 m
070 = 7 m
080 = 8 m
090 = 9 m
100 = 10 m

Cable type:
U: PVC UL approved cable

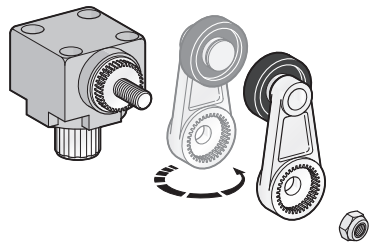
Examples

EM1G11Z030: 30 mm. width limit switch - plain plunger - snap action contact block - 3 m. standard cable.
EM1G11ZU: 30 mm. limit switch - plain plunger - snap action contact block - 1 m. UL cable.
EM1G11Z040U: 30 mm. width limit switch - plain plunger - snap action contact block - 4 m. UL cable.

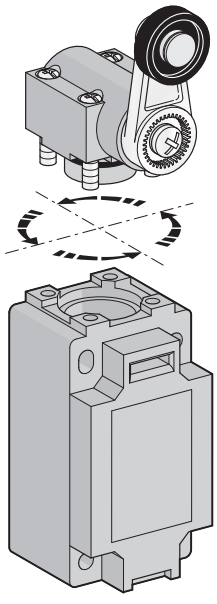
• **Ordering details** ..... page 58 to 73



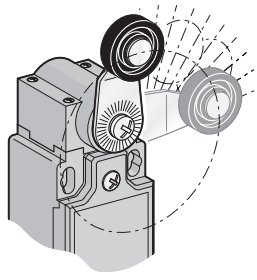
Lever round turning: AP...; BP...; DP...; AM...; DM...; EP...; EM...



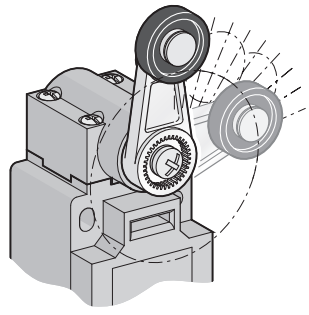
Lever roiund turning: BM...; CM...



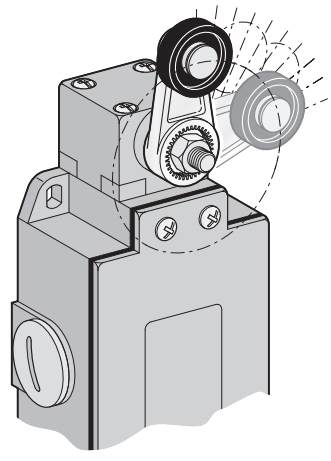
Head orientation: all series
(EP and EM series: 180° only)



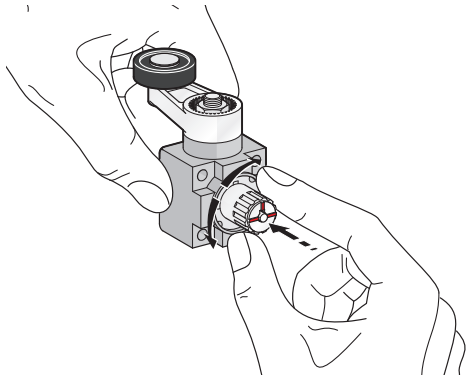
Free position adjustment 10 in 10° of lever:
AP...; DP...; AM...; DM...; EP...; EM...

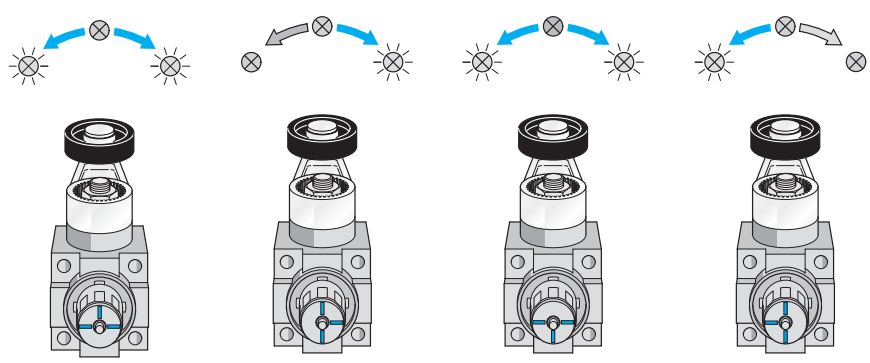


Free position adjustment 9 in 9° of lever:
BP...



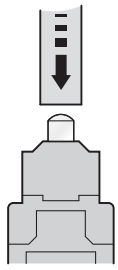
Free position adjustment 9 in 9° of lever:
BM...; CM...



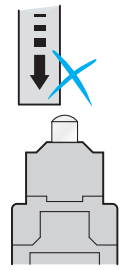


BP...; BM...; CM... operating mode selection only

Plain Plunger

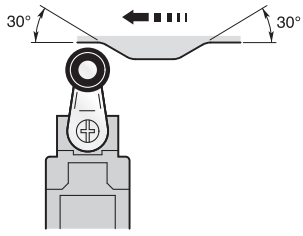


Correct

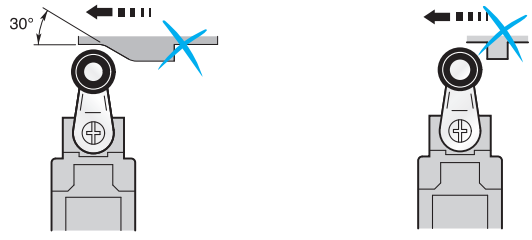


Incorrect

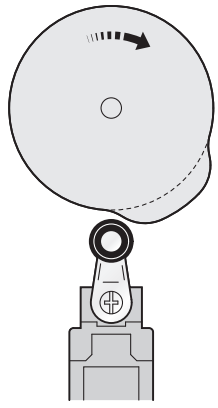
Roller Plunger or Roller Lever



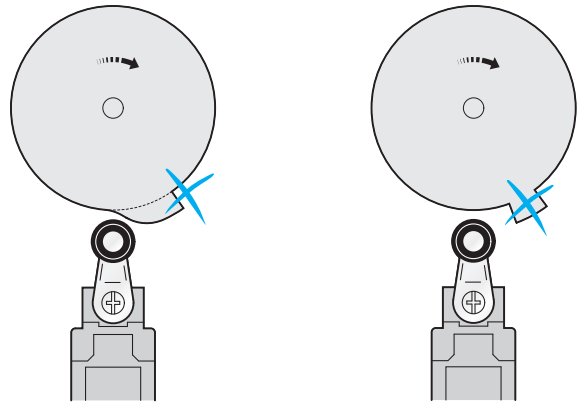
Correct



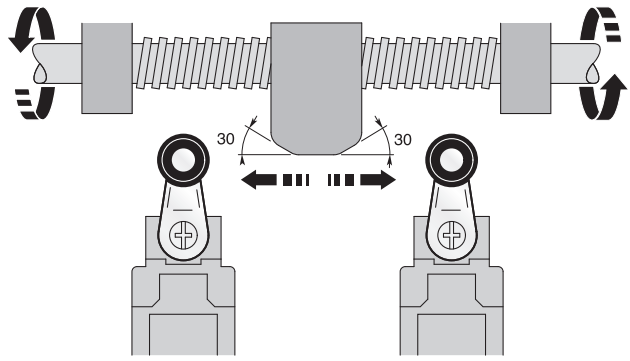
Incorrect



Correct



Incorrect



For a relatively slow movement of the switch actuator, a limit switch with a snap action contact block is preferred.

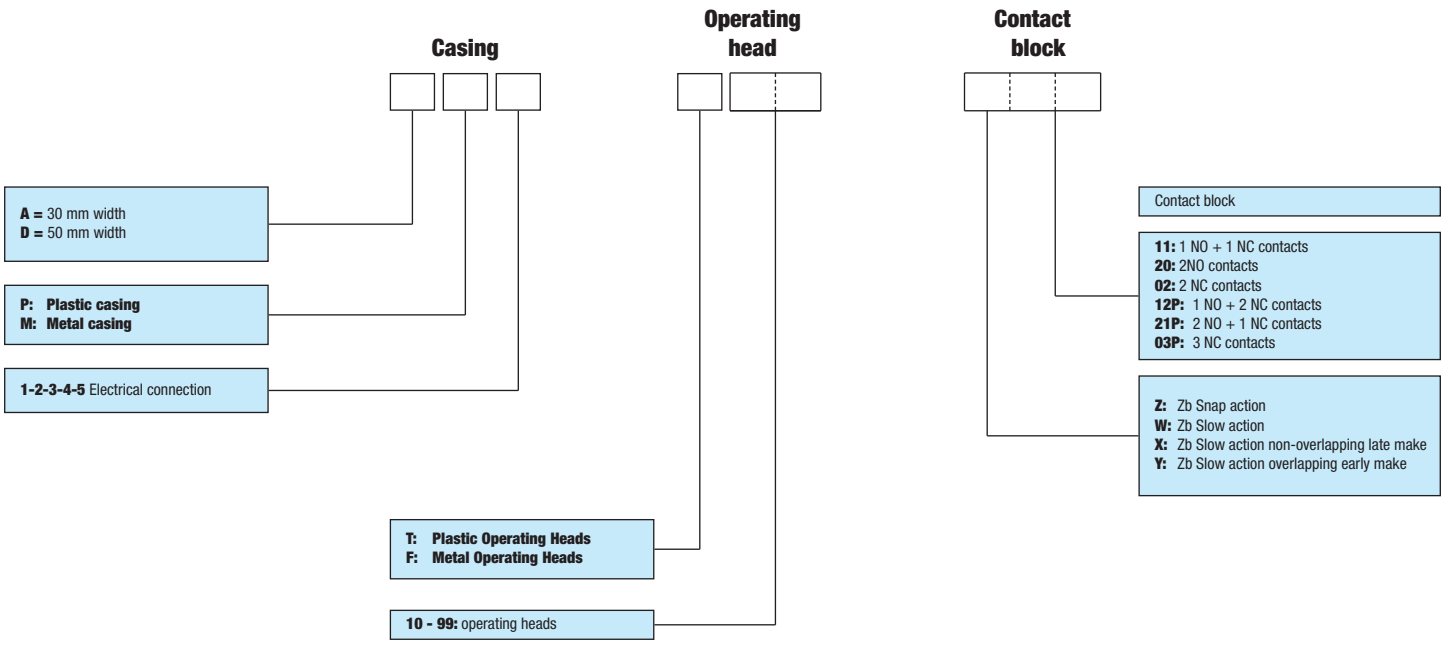
AP... / AM... / DP... / DM... special versions

The operating heads used in plastic limit switches AP and DP series have nthe same dimensions of the ones used in the corresponding metal AM and DM series. It is therefore possible to supply "mixed" versions, that is:

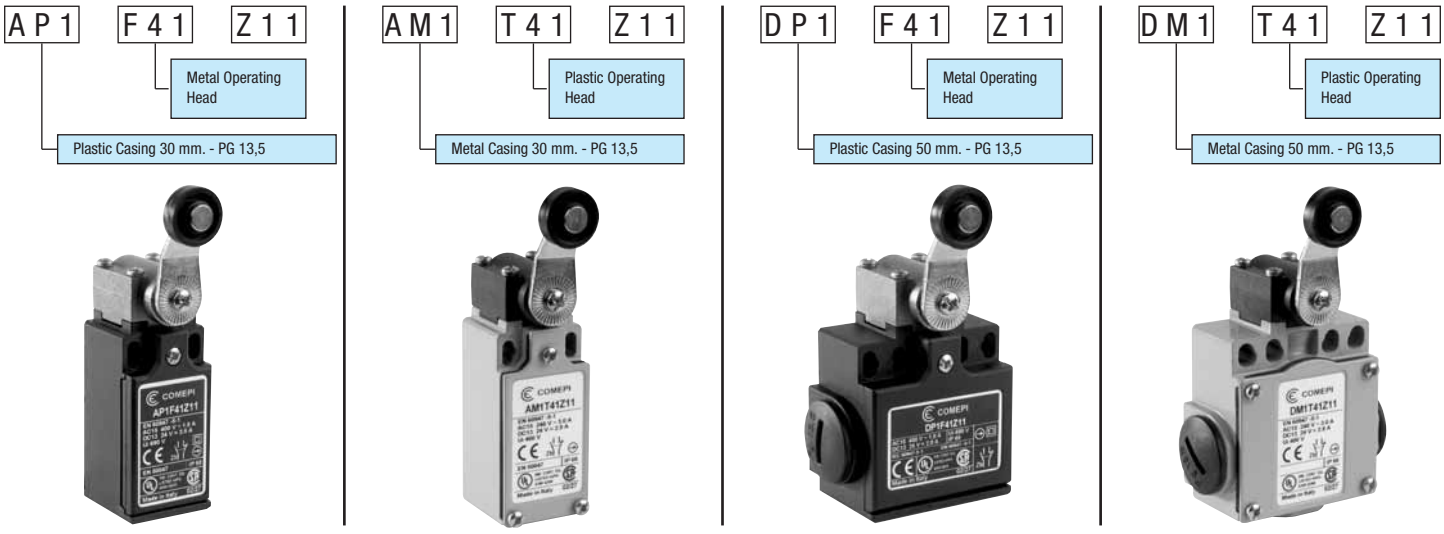
- plastic operating head on metal casing

- metal operating head on plastic casing

These "mixed" versions can be demanded as follows



Esempi:



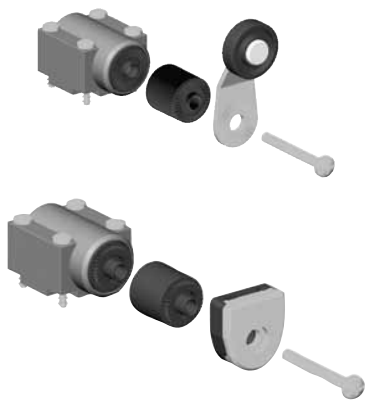
For further information, please contact our technical department.

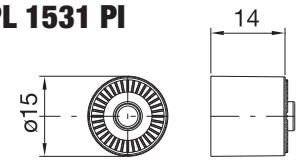
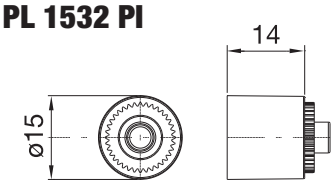
Spare parts

Spare components can be supplied upon request.

Spacers

This accessory, made of polymer glass-reinforced resin,allows the lever to operate with a different offset.



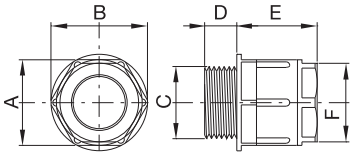
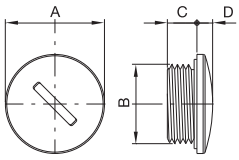
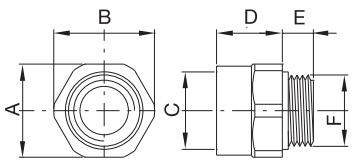
Order Code	Compatible Heads
PL 1531 PI 	T41 ÷ T46 F41 ÷ F46 G41 ÷ G45
PL 1532 PI 	T51 ÷ T75 F51 ÷ F75 G51 ÷ G75

In order to install this accessory a longer screw is needed (delivered along with ther spacer).

Cable glands - Blanking plugs - Thread adapters



The use of correct clable gland (or blanking plug in case of unused cable inlets) is recommended if the product is installed in an environmental place in which a protection degree against water or dust is needed. Comepi's cable glands and blanking plugs are realized to guarantee protection degree of IP 66.
Thread adapters are available in order to reach the customers' request. The adapters must always be used in case a conduit connection directly on the limit switch is needed. Different adapters can be supplied upon request.

	Order Code		Description	Dimensions A	B	C	D	E	F
Cable Gland 	**XX 1029 C0**	PG 13.5	Plastic Cable Gland	24	–	PG 13.5	10	24-29	ø 7-12
	XX 1028 C0	PG 11	Plastic Cable Gland	22	–	PG 11	10	23-28	ø 5-10
	XX 1032 C0	M 16 x 1,5	Plastic Cable Gland	19	–	M 16 x 1,5	8	23-28	ø 7-10
	XX 1033 C0	M20 x 1,5	Plastic Cable Gland	25	–	M 20 x 1,5	9	24-29	ø 8-13
	XX 1020 C0	PG 16	Plastic Cable Gland	27	–	PG 16	10	26-31	ø 10-14
Blanking Plug 	**PL 2029 PI**	PG 13.5	Plastic Blanking Plug	25	PG 13.5	6	3.5	–	–
	XT 007	PG 11	Plastic Blanking Plug	22	PG 11	6	3	–	–
	XX 1030 C0	M 16 x 1,5	Plastic Blanking Plug	20	M 16 x 1,5	6	3	–	–
	XX 1031 C0	M 20 x 1,5	Plastic Blanking Plug	24	M 20 x 1,5	6	3,5	–	–
	XX 1019 C0	PG 16	Plastic Blanking Plug	27	PG 16	6	3,5	–	–
Thread Adapters 	**PL 2000 PI**	PG 11	1/2" NPT Plastic Adapter	24	26	1/2" NPT	17	8	PG 11
	T0 2000 PE	Brass Intermediary Connection 1/2" NPT - 1/2" NPT		24	26	1/2" NPT	17	6	1/2" NPT

AP_T Limit Switches

Double Insulation

Plastic Casing IP65 - 30 mm. width

Electrical Connection

AP1: one cable inlet for PG 13,5 Cable Gland

AP2: one cable inlet by 1/2" NPT Plastic Adapter

AP3: one cable inlet for PG11 Cable Gland

AP4: one cable inlet for M16 x 1,5 Cable Gland

AP5: one cable inlet for M20 x 1,5 Cable Gland

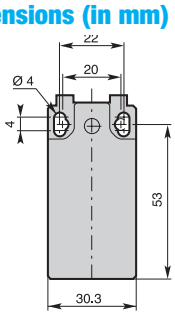
Operating Head Type

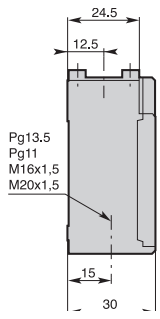
	T1• - Plain plunger T10: nylon plunger T11: metal plunger	**T1• - Roller plunger** T12: metal roller T13: nylon roller	**T14 - Metal plunger with dust protection cup**
Conformity / ⊕ (N.C. contact with positive opening operation)	EN 50047 ⊕	EN 50047 ⊕	EN 50047 ⊕
Max actuation speed [m/s]	0,5	0,3	0,5
Min. force [N] or torque [Nm]: actuation / positive opening operation	15 / 30	12 / 30	15 / 30

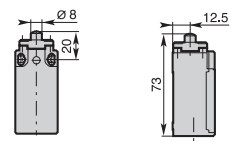
Additional Technical Datas

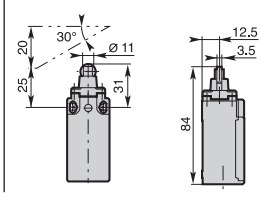
		AP•T1•Z11	**AP•T1•Z11**	**AP•T14Z11**
Z11 Snap Action Contacts (1NO + 1NC)	13 21 / 14 22	Order Code / Operation Diagram	Order Code / Operation Diagram	Order Code / Operation Diagram
X11 Non overlapping Slow Action Contacts (1NO + 1NC)	13 21 / 14 22	**AP•T1•X11**	**AP•T1•X11**	**AP•T14X11**
Y11 Overlapping Slow Action Contacts (1NO + 1NC)	13 21 / 14 22	**AP•T1•Y11**	**AP•T1•Y11**	**AP•T14Y11**
W02 Slow Action Contacts (2NC)	11 21 / 12 22	**AP•T1•W02**	**AP•T1•W02**	**AP•T14W02**
W20 Slow Action Contacts (2NO) ⊗	13 23 / 14 24	**AP•T1•W20**	**AP•T1•W20**	**AP•T14W20**
Z02 Snap Action Contacts (2NC)	11 21 / 12 22	**AP•T1•Z02**	**AP•T1•Z02**	**AP•T14Z02**
X12P Non overlapping Slow Action Contacts (1NO + 2NC)	13 21 31 / 14 22 32	**AP•T1•X12P**	**AP•T1•X12P**	**AP•T14X12P**
X21P Non overlapping Slow Action Contacts (2NO + 1NC)	13 23 31 / 14 24 32	**AP•T1•X21P**	**AP•T1•X21P**	**AP•T14X21P**
W03P Slow Action Contacts (3NC)	11 21 31 / 12 22 32	**AP•T1•W03P**	**AP•T1•W03P**	**AP•T14W03P**
Weight (packing per unit)	**[kg]**	**0,070**	**0,075**	**0,070**

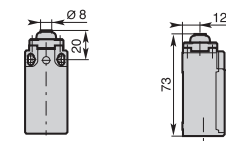
Dimensions (in mm)











• Travel, operation diagrams and technical data ..... pages 7, 9

Utilization precautions ..... pages 14, 15

AP_T Limit Switches

Double Insulation

Plastic Casing IP65 - 30 mm. width

T3• - Plastic roller lever
T30: on plastic plunger
T31: on metal plunger

EN 50047
1,0
7 / 24

T3• - Plastic roller lever
T32: on metal plunger
T34: on plastic plunger

1,0
7 / 24

T35 - Plastic roller lever on metal plunger with dust protection cup

EN 50047
1,0
7 / 24

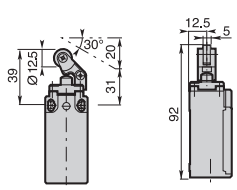
T36 - Plastic roller lever on metal plunger with dust protection cup

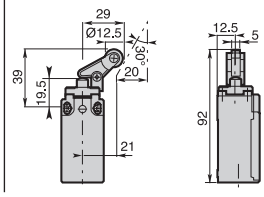
1,0
7 / 24

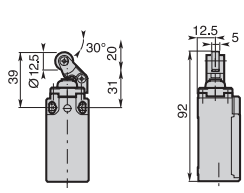
T38 - Adjustable plastic roller lever on metal plunger T39 - Same as above with dust protection cup

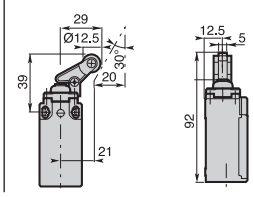
EN 50047
1,0
7 / 24

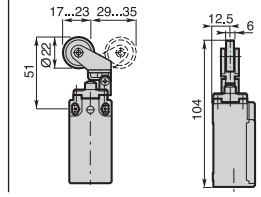
AP•T3•Z11	**AP•T3•Z11**	**AP•T35Z11**	**AP•T36Z11**	**AP•T3•Z11**
AP•T3•X11	**AP•T3•X11**	**AP•T35X11**	**AP•T36X11**	**AP•T3•X11**
AP•T3•Y11	**AP•T3•Y11**	**AP•T35Y11**	**AP•T36Y11**	**AP•T3•Y11**
AP•T3•W02	**AP•T3•W02**	**AP•T35W02**	**AP•T36W02**	**AP•T3•W02**
AP•T3•W20	**AP•T3•W20**	**AP•T35W20**	**AP•T36W20**	**AP•T3•W20**
AP•T3•Z02	**AP•T3•Z02**	**AP•T35Z02**	**AP•T36Z02**	**AP•T3•Z02**
AP•T3•X12P	**AP•T3•X12P**	**AP•T35X12P**	**AP•T36X12P**	**AP•T3•X12P**
AP•T3•X21P	**AP•T3•X21P**	**AP•T35X21P**	**AP•T36X21P**	**AP•T3•X21P**
AP•T3•W03P	**AP•T3•W03P**	**AP•T35W03P**	**AP•T36W03P**	**AP•T3•W03P**
0,075	**0,080**	**0,075**	**0,080**	**0,080**











• Travel, operation diagrams and technical data ..... pages 7, 9

Utilization precautions ..... pages 14, 15

AP_T Limit Switches

Double Insulation

Plastic Casing IP65 - 30 mm. width

Electrical Connection

AP1: one cable inlet for PG 13,5 Cable Gland

AP2: one cable inlet by 1/2" NPT Plastic Adapter

AP3: one cable inlet for PG11 Cable Gland

AP4: one cable inlet for M16 x 1,5 Cable Gland

AP5: one cable inlet for M20 x 1,5 Cable Gland

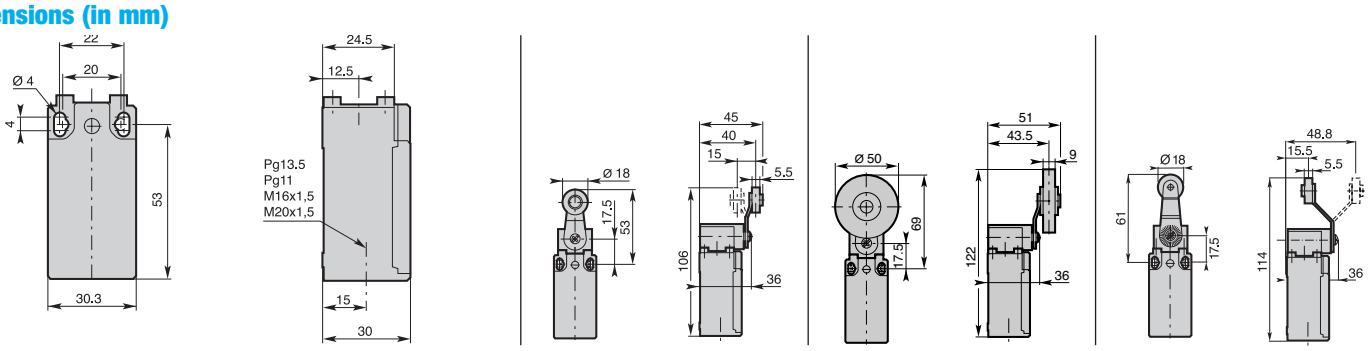
Operating Head Type

	T4• - Ø 18 roller lever T41: nylon roller T43: metal roller	**T42 - Ø 50** **rubber roller lever**	**T4• - Ø 18 roller lever** T45: nylon roller T46: metal roller
Conformity / ⊖ (N.C. contact with positive opening operation)	EN 50047 ⊖	⊖	⊖
Max actuation speed [m/s]	1,5	1,5	1,5
Min. force [N] or torque [Nm]: actuation / positive opening operation	0,10 / 0,32	0,10 / 0,32	0,10 / 0,32

Additional Technical Datas

Z11 Snap Action Contacts (1NO + 1NC)	13 21 / 14 22	**Order Code**	**AP•T4•Z11**	**AP•T42Z11**	**AP•T4•Z11**
		Operation Diagram	0 17° 31° 47° 74° / 21-22 13-14 / 21-22 13-14	0 17° 31° 47° 74° / 21-22 13-14 / 21-22 13-14	0 17° 31° 47° 74° / 21-22 13-14 / 21-22 13-14
X11 Non overlapping Slow Action Contacts (1NO + 1NC)	13 21 / 14 22	**Order Code**	**AP•T4•X11**	**AP•T42X11**	**AP•T4•X11**
		Operation Diagram	0 21° 37° 74° / 21-22 13-14 / 30°	0 21° 37° 74° / 21-22 13-14 / 30°	0 21° 37° 74° / 21-22 13-14 / 30°
Y11 Overlapping Slow Action Contacts (1NO + 1NC)	13 21 / 14 22	**Order Code**	**AP•T4•Y11**	**AP•T42Y11**	**AP•T4•Y11**
		Operation Diagram	0 35° 51° 74° / 21-22 13-14 / 18°	0 35° 51° 74° / 21-22 13-14 / 18°	0 35° 51° 74° / 21-22 13-14 / 18°
W02 Slow Action Contacts (2NC)	11 21 / 12 22	**Order Code**	**AP•T4•W02**	**AP•T42W02**	**AP•T4•W02**
		Operation Diagram	0 19° 37° 74° / 11-12 21-22	0 19° 37° 74° / 11-12 21-22	0 19° 37° 74° / 11-12 21-22
W20 Slow Action Contacts (2NO) ⊗	13 23 / 14 24	**Order Code**	**AP•T4•W20**	**AP•T42W20**	**AP•T4•W20**
		Operation Diagram	0 18° 74° / 13-14 23-24	0 18° 74° / 13-14 23-24	0 18° 74° / 13-14 23-24
Z02 Snap Action Contacts (2NC)	11 21 / 12 22	**Order Code**	**AP•T4•Z02**	**AP•T42Z02**	**AP•T4•Z02**
		Operation Diagram	0 17° 30° 46° 74° / 11-12 21-22 / 11-12 21-22	0 17° 30° 46° 74° / 11-12 21-22 / 11-12 21-22	0 17° 30° 46° 74° / 11-12 21-22 / 11-12 21-22
X12P Non overlapping Slow Action Contacts (1NO + 2NC)	13 21 31 / 14 22 32	**Order Code**	**AP•T4•X12P**	**AP•T42X12P**	**AP•T4•X12P**
		Operation Diagram	0 24° 40° 74° / 21-22 31-32 13-14 / 38°	0 24° 40° 74° / 21-22 31-32 13-14 / 38°	0 24° 40° 74° / 21-22 31-32 13-14 / 38°
X21P Non overlapping Slow Action Contacts (2NO + 1NC)	13 23 31 / 14 24 32	**Order Code**	**AP•T4•X21P**	**AP•T42X21P**	**AP•T4•X21P**
		Operation Diagram	0 24° 40° 74° / 31-32 13-14 23-24 / 38°	0 24° 40° 74° / 31-32 13-14 23-24 / 38°	0 24° 40° 74° / 31-32 13-14 23-24 / 38°
W03P Slow Action Contacts (3NC)	11 21 31 / 12 22 32	**Order Code**	**AP•T4•W03P**	**AP•T42W03P**	**AP•T4•W03P**
		Operation Diagram	0 24° 40° 74° / 11-12 21-22 31-32	0 24° 40° 74° / 11-12 21-22 31-32	0 24° 40° 74° / 11-12 21-22 31-32
Weight (packing per unit)		**[kg]**	**0,095**	**0,115**	**0,095**

Dimensions (in mm)



• Travel, operation diagrams and technical data ..... pages 7, 9

Utilization precautions ..... pages 14, 15

AP_T Limit Switches

Double Insulation

Plastic Casing IP65 - 30 mm. width

T48 - Ceramic rod lever

T5• - Adjustable lever with Ø 18 roller

T51: nylon roller

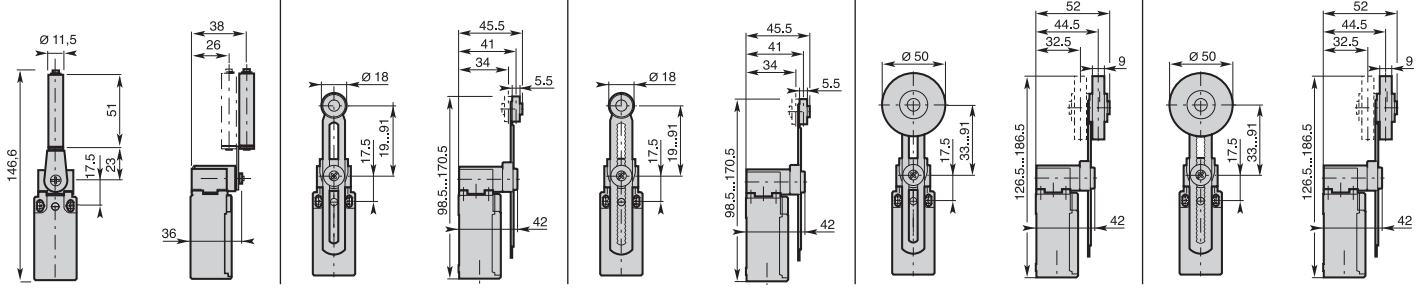
T53: metal roller

T5100 - Adjustable toothed lever (step 2 mm) with Ø 18 nylon roller

T52 - Adjustable lever with Ø 50 rubber roller

T5200 - Adjustable toothed lever (step 2 mm) with Ø 50 rubber roller

1,5 0,10 / 0,32	1,5 0,10 / 0,32	1,5 0,10 / 0,32	1,5 0,10 / 0,32	1,5 0,10 / 0,32
AP•T48Z11	**AP•T5•Z11**	**AP•T5100Z11**	**AP•T52Z11**	**AP•T5200Z11**
AP•T48X11	**AP•T5•X11**	**AP•T5100X11**	**AP•T52X11**	**AP•T5200X11**
AP•T48Y11	**AP•T5•Y11**	**AP•T5100Y11**	**AP•T52Y11**	**AP•T5200Y11**
AP•T48W02	**AP•T5•W02**	**AP•T5100W02**	**AP•T52W02**	**AP•T5200W02**
AP•T48W20	**AP•T5•W20**	**AP•T5100W20**	**AP•T52W20**	**AP•T5200W20**
AP•T48Z02	**AP•T5•Z02**	**AP•T5100Z02**	**AP•T52Z02**	**AP•T5200Z02**
AP•T48X12P	**AP•T5•X12P**	**AP•T5100X12P**	**AP•T52X12P**	**AP•T5200X12P**
AP•T48X21P	**AP•T5•X21P**	**AP•T5100X21P**	**AP•T52X21P**	**AP•T5200X21P**
AP•T48W03P	**AP•T5•W03P**	**AP•T5100W03P**	**AP•T52W03P**	**AP•T5200W03P**
0,100	**0,105**	**0,105**	**0,125**	**0,125**



• Travel, operation diagrams and technical data ..... pages 7, 9

Utilization precautions ..... pages 14, 15

AP_T Limit Switches

Double Insulation

Plastic Casing IP65 - 30 mm. width

Electrical Connection

AP1: one cable inlet for PG 13,5 Cable Gland

AP2: one cable inlet by 1/2" NPT Plastic Adapter

AP3: one cable inlet for PG11 Cable Gland

AP4: one cable inlet for M16 x 1,5 Cable Gland

AP5: one cable inlet for M20 x 1,5 Cable Gland

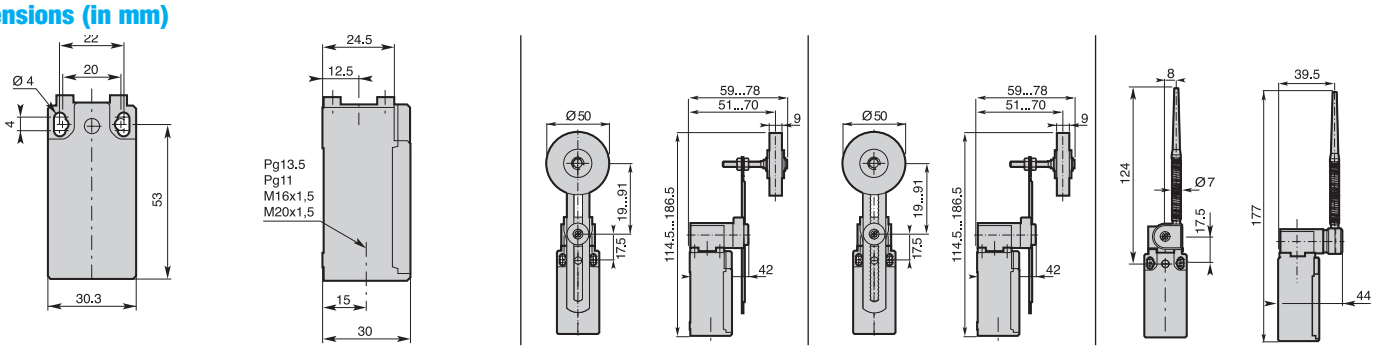
Operating Head Type

	T55 - Adjustable lever with adjustable Ø 50 Rubber roller	T5500 - Adjustable toothed lever (step 2 mm) with adjustable Ø 50 Rubber roller	T61 - Nylon actuator with stainless steel spring
Conformity / ⊖ (N.C. contact with positive opening operation)	⊖	⊖	
Max actuation speed [m/s]	1,5	1,5	1,5
Min. force [N] or torque [Nm]: actuation / positive opening operation	0,10 / 0,32	0,10 / 0,32	0,10 / –

Additional Technical Datas

		T55 - Adjustable lever with adjustable Ø 50 Rubber roller	T5500 - Adjustable toothed lever (step 2 mm) with adjustable Ø 50 Rubber roller	T61 - Nylon actuator with stainless steel spring
Z11 Snap Action Contacts (1NO + 1NC)	Order Code	**AP•T55Z11**	**AP•T5500Z11**	**AP•T61Z11**
	Operation Diagram	0 17° 31° 47° 74°	0 17° 31° 47° 74°	0 17° 31° 74°
X11 Non overlapping Slow Action Contacts (1NO + 1NC)	Order Code	**AP•T55X11**	**AP•T5500X11**	**AP•T61X11**
	Operation Diagram	0 21° 37° 74° (30°)	0 21° 37° 74° (30°)	0 21° 74° (30°)
Y11 Overlapping Slow Action Contacts (1NO + 1NC)	Order Code	**AP•T55Y11**	**AP•T5500Y11**	**AP•T61Z11**
	Operation Diagram	0 35° 51° 74° (18°)	0 35° 51° 74° (18°)	0 35° 74° (18°)
W02 Slow Action Contacts (2NC)	Order Code	**AP•T55W02**	**AP•T5500W02**	**AP•T61W02**
	Operation Diagram	0 19° 37° 74°	0 19° 37° 74°	0 19° 74°
W20 Slow Action Contacts (2NO) ⊛	Order Code	**AP•T55W20**	**AP•T5500W20**	**AP•T61W20**
	Operation Diagram	0 18° 74°	0 18° 74°	0 18° 74°
Z02 Snap Action Contacts (2NC)	Order Code	**AP•T55Z02**	**AP•T5500Z02**	**AP•T61Z02**
	Operation Diagram	0 17° 30° 46° 74°	0 17° 30° 46° 74°	0 17° 30° 74°
X12P Non overlapping Slow Action Contacts (1NO + 2NC)	Order Code	**AP•T55X12P**	**AP•T5500X12P**	**AP•T61X12P**
	Operation Diagram	0 24° 40° 74° (38°)	0 24° 40° 74° (38°)	0 24° 74° (38°)
X21P Non overlapping Slow Action Contacts (2NO + 1NC)	Order Code	**AP•T55X21P**	**AP•T5500X21P**	**AP•T61X21P**
	Operation Diagram	0 24° 40° 74° (38°)	0 24° 40° 74° (38°)	0 24° 74° (38°)
W03P Slow Action Contacts (3NC)	Order Code	**AP•T55W03P**	**AP•T5500W03P**	**AP•T61W03P**
	Operation Diagram	0 24° 40° 74°	0 24° 40° 74°	0 24° 74°
Weight (packing per unit)	**[kg]**	**0,130**	**0,130**	**0,105**

Dimensions (in mm)



• Travel, operation diagrams and technical data ..... pages 7, 9

Utilization precautions ..... pages 14, 15

AP_T Limit Switches

Double Insulation

Plastic Casing IP65 - 30 mm. width

T62 - Stainless steel spring actuator

1,5
0,10 / –

T7• - Adjustable Ø 3 rod lever
T71: stainless steel rod
T72: fiberglass rod

1,5
0,10 / 0,32

T7• - Adjustable Ø 6 rod lever
T73: nylon rod
T74: fiberglass rod

1,5
0,10 / 0,32

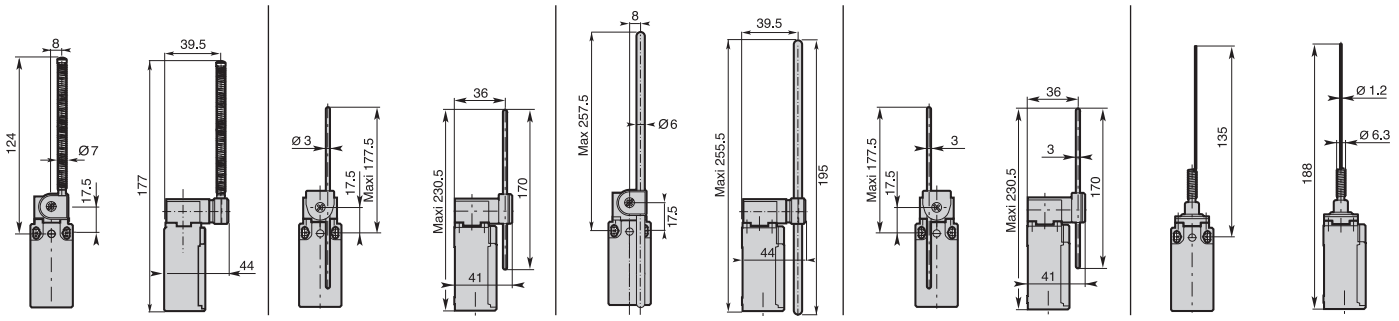
T75 - Adjustable square steel rod lever

1,5
0,10 / 0,32

T91: Stainless steel spring multidirectional actuator

1,0
0,12 / –

AP•T62Z11	AP•T7•Z11	AP•T7•Z11	AP•T75Z11	AP•T91Z11
AP•T62X11	AP•T7•X11	AP•T7•X11	AP•T75X11	AP•T91X11
AP•T62Y11	AP•T7•Y11	AP•T7•Y11	AP•T75Y11	AP•T91Y11
AP•T62W02	AP•T7•W02	AP•T7•W02	AP•T75W02	AP•T91W02
AP•T62W20	AP•T7•W20	AP•T7•W20	AP•T75W20	AP•T91W20
AP•T62Z02	AP•T7•Z02	AP•T7•Z02	AP•T75Z02	AP•T91Z02
AP•T62•X12P	AP•T7•X12P	AP•T7•X12P	AP•T75X12P	AP•T91X12P
AP•T62•X21P	AP•T7•X21P	AP•T7•X21P	AP•T75X21P	AP•T91X21P
AP•T62•W03P	AP•T7•W03P	AP•T7•W03P	AP•T75W03P	AP•T91W03P
0,105	0,105	0,115	0,105	0,080



• Travel, operation diagrams and technical data ..... pages 7, 9

Utilization precautions ..... pages 14, 15

AP_T Limit Switches

Double Insulation

Plastic Casing IP65 - 30 mm. width

Electrical Connection

AP1: one cable inlet for PG 13,5 Cable Gland

AP2: one cable inlet by 1/2" NPT Plastic Adapter

AP3: one cable inlet for PG11 Cable Gland

AP4: one cable inlet for M16 x 1,5 Cable Gland

AP5: one cable inlet for M20 x 1,5 Cable Gland

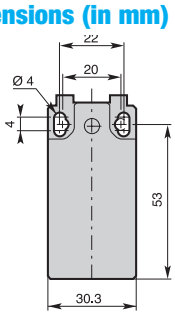
Operating Head Type

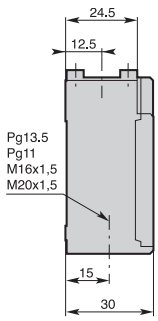
	T92: Multidirectional nylon actuator with stainless steel spring	T93: Stainless steel spring multidirectional actuator	T98: Pull action with ring
Conformity / ⊖ (N.C. contact with positive opening operation)			
Max actuation speed [m/s]	1,0	1,0	0,5
Min. force [N] or torque [Nm]: actuation / positive opening operation	0,12 / –	0,12 / –	30 / –

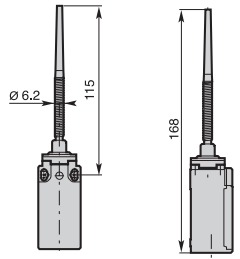
Additional Technical Datas

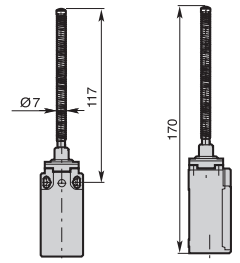
		T92: Multidirectional nylon actuator with stainless steel spring	T93: Stainless steel spring multidirectional actuator	T98: Pull action with ring
Z11 Snap Action Contacts (1NO + 1NC)	Order Code	**AP•T92Z11**	**AP•T93Z11**	**AP•T98Z11A**
	Operation Diagram	0 12° 23°	0 12° 23°	0 0.9 2.0 5.6 mm
X11 Non overlapping Slow Action Contacts (1NO + 1NC)	Order Code	**AP•T92X11**	**AP•T93X11**	**AP•T98X11A**
	Operation Diagram	0 14° 21°	0 14° 21°	0 1.0 5.6 mm 1.9
Y11 Overlapping Slow Action Contacts (1NO + 1NC)	Order Code	**AP•T92Y11**	**AP•T93Y11**	**AP•T98Z11A**
	Operation Diagram	0 25° 12°	0 25° 12°	0 2.0 5.6 mm 0.6
W02 Slow Action Contacts (2NC)	Order Code	**AP•T92W02**	**AP•T93W02**	**AP•T98W02A**
	Operation Diagram	0 14°	0 14°	0 2.0 5.6 mm
W20 Slow Action Contacts (2NO) ⊗	Order Code	**AP•T92W20**	**AP•T93W20**	**AP•T98W20A**
	Operation Diagram	0 13°	0 13°	0 1.8 5.6 mm
Z02 Snap Action Contacts (2NC)	Order Code	**AP•T92Z02**	**AP•T93Z02**	
	Operation Diagram	0 12° 22°	0 12° 22°	
X12P Non overlapping Slow Action Contacts (1NO + 2NC)	Order Code	**AP•T92X12P**	**AP•T93X12P**	
	Operation Diagram	0 16° 26°	0 16° 26°	
X21P Non overlapping Slow Action Contacts (2NO + 1NC)	Order Code	**AP•T92X21P**	**AP•T93X21P**	
	Operation Diagram	0 16° 26°	0 16° 26°	
W03P Slow Action Contacts (3NC)	Order Code	**AP•T92W03P**	**AP•T93W03P**	
	Operation Diagram	0 16°	0 16°	
Weight (packing per unit)	**[kg]**	**0,085**	**0,090**	**0,115**

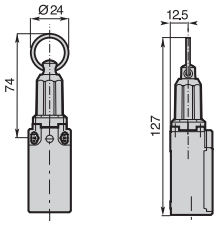
Dimensions (in mm)











• Travel, operation diagrams and technical data ..... pages 7, 9

Utilization precautions ..... pages 14, 15

DP_T Limit Switches

Double Insulation

Plastic Casing IP65 - 50 mm. width

Electrical Connection

DP1: two cable inlets for PG 13,5 Cable Gland

DP2: two cable inlets for PG11 Cable Gland with one plastic adapter PG11 - 1/2" NPT

DP3: two cable inlets for PG11 Cable Gland

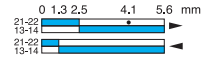
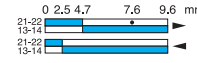
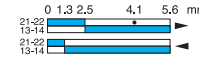
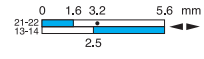
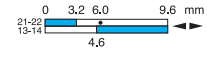
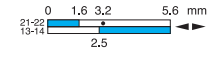
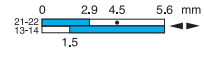
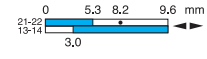
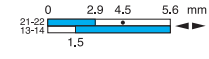
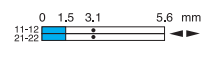
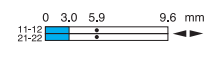
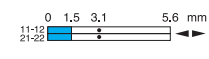
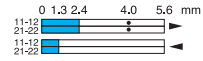
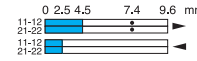
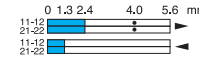
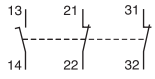
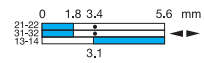
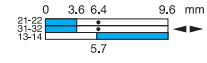
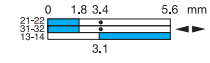
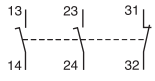
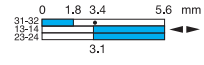
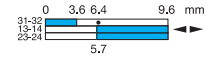
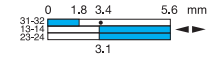
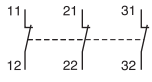
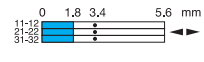
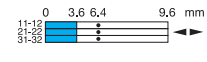
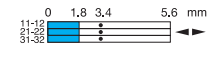
DP4: two cable inlets for M16 x 1,5 Cable Gland

DP5: two cable inlets for M20 x 1,5 Cable Gland

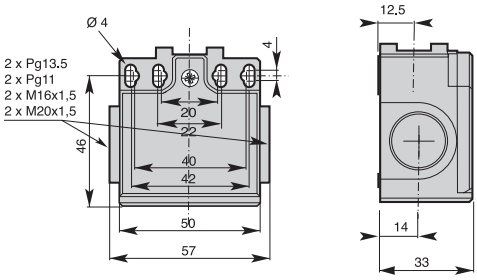
Operating Head Type

	T1• - Plain plunger T10: nylon plunger T11: metal plunger	**T1• - Roller plunger** T12: metal roller T13: nylon roller	**T14 - Metal plunger with dust protection cup**
Conformity / ⊕ (N.C. contact with positive opening operation)	⊕	⊕	⊕
Max actuation speed [m/s]	0,5	0,3	0,5
Min. force [N] or torque [Nm]: actuation / positive opening operation	15 / 30	12 / 30	15 / 30

Additional Technical Datas

		Order Code	**DP•T1•Z11**	**DP•T1•Z11**	**DP•T14Z11**
Z11 Snap Action Contacts (1NO + 1NC)		Operation Diagram			
X11 Non overlapping Slow Action Contacts (1NO + 1NC)		**Order Code** Operation Diagram	**DP•T1•X11** 	**DP•T1•X11** 	**DP•T14X11** 
Y11 Overlapping Slow Action Contacts (1NO + 1NC)		**Order Code** Operation Diagram	**DP•T1•Y11** 	**DP•T1•Y11** 	**DP•T14Y11** 
W02 Slow Action Contacts (2NC)		**Order Code** Operation Diagram	**DP•T1•W02** 	**DP•T1•W02** 	**DP•T14W02** 
W20 Slow Action Contacts (2NO) ⊗		**Order Code** Operation Diagram	**DP•T1•W20** 	**DP•T1•W20** 	**DP•T14W20** 
Z02 Snap Action Contacts (2NC)		**Order Code** Operation Diagram	**DP•T1•Z02** 	**DP•T1•Z02** 	**DP•T14Z02** 
X12P Non overlapping Slow Action Contacts (1NO + 2NC)		**Order Code** Operation Diagram	**DP•T1•X12P** 	**DP•T1•X12P** 	**DP•T14X12P** 
X21P Non overlapping Slow Action Contacts (2NO + 1NC)		**Order Code** Operation Diagram	**DP•T1•X21P** 	**DP•T1•X21P** 	**DP•T14X21P** 
W03P Slow Action Contacts (3NC)		**Order Code** Operation Diagram	**DP•T1•W03P** 	**DP•T1•W03P** 	**DP•T14W03P** 
Weight (packing per unit)		**[kg]**	**0,100**	**0,105**	**0,100**

Dimensions (in mm)



• Travel, operation diagrams and technical data ..... pages 7, 9

Utilization precautions ..... pages 14, 15

DP_T Limit Switches

Double Insulation

Plastic Casing IP65 - 50 mm. width

Electrical Connection

DP1: two cable inlets for PG 13,5 Cable Gland

DP2: two cable inlets for PG11 Cable Gland with one plastic adapter PG11 - 1/2" NPT

DP3: two cable inlets for PG11 Cable Gland

DP4: two cable inlets for M16 x 1,5 Cable Gland

DP5: two cable inlets for M20 x 1,5 Cable Gland

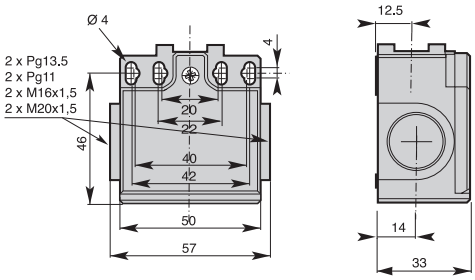
Operating Head Type

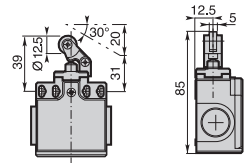
	T3• - Plastic roller lever T30: on plastic plunger T31: on metal plunger	**T35 - Plastic roller lever on metal plunger with dust protection cup**	**T38 - Adjustable plastic roller lever on metal plunger** **T39 - Same as above with dust protection cup**
Conformity / ⊕ (N.C. contact with positive opening operation)	⊕	⊕	⊕
Max actuation speed [m/s]	1,0	1,0	1,0
Min. force [N] or torque [Nm]: actuation / positive opening operation	7 / 24	7 / 24	7 / 24

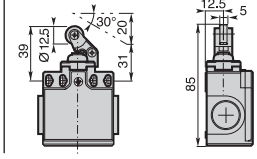
Additional Technical Datas

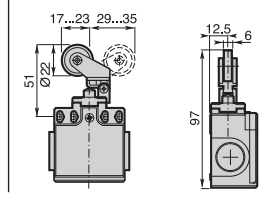
		DP•T3•Z11	**DP•T35Z11**	**DP•T3•Z11**
Z11 Snap Action Contacts (1NO + 1NC)	13 21 / 14 22	Order Code / Operation Diagram		
X11 Non overlapping Slow Action Contacts (1NO + 1NC)	13 21 / 14 22	**DP•T3•X11**	**DP•T35X11**	**DP•T3•X11**
Y11 Overlapping Slow Action Contacts (1NO + 1NC)	13 21 / 14 22	**DP•T3•Y11**	**DP•T35Y11**	**DP•T3•Y11**
W02 Slow Action Contacts (2NC)	11 21 / 12 22	**DP•T3•W02**	**DP•T35W02**	**DP•T3•W02**
W20 Slow Action Contacts (2NO) ⊗	13 23 / 14 24	**DP•T3•W20**	**DP•T35W20**	**DP•T3•W20**
Z02 Snap Action Contacts (2NC)	11 21 / 12 22	**DP•T3•Z02**	**DP•T35Z02**	**DP•T3•Z02**
X12P Non overlapping Slow Action Contacts (1NO + 2NC)	13 21 31 / 14 22 32	**DP•T3•X12P**	**DP•T35X12P**	**DP•T3•X12P**
X21P Non overlapping Slow Action Contacts (2NO + 1NC)	13 23 31 / 14 24 32	**DP•T3•X21P**	**DP•T35X21P**	**DP•T3•X21P**
W03P Slow Action Contacts (3NC)	11 21 31 / 12 22 32	**DP•T3•W03P**	**DP•T35W03P**	**DP•T3•W03P**
Weight (packing per unit)	**[kg]**	**0,105**	**0,105**	**0,110**

Dimensions (in mm)









• Travel, operation diagrams and technical data ..... pages 7, 9

Utilization precautions ..... pages 14, 15

DP_T Limit Switches

Double Insulation

Plastic Casing IP65 - 50 mm. width

T4• - Ø 18 roller lever
T41: nylon roller
T43: metal roller

1,5
0,10 / 0,32

T42 - Ø 50 rubber roller lever

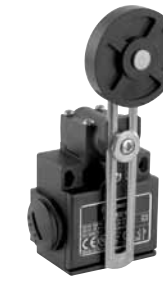
1,5
0,10 / 0,32

T4• - Ø 18 roller lever
T45: nylon roller
T46: metal roller

1,5
0,10 / 0,32

T5• - Adjustable lever with Ø 18 roller
T51: nylon roller
T53: metal roller

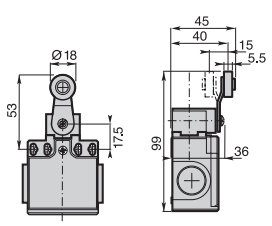
1,5
0,10 / 0,32

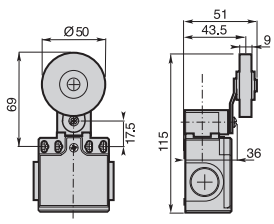


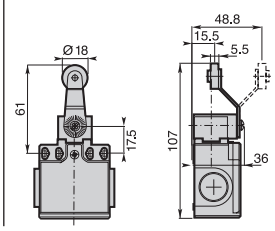
T52 - Adjustable Ø 50 rubber roller lever

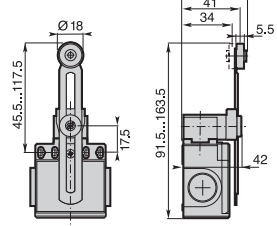
1,5
0,10 / 0,32

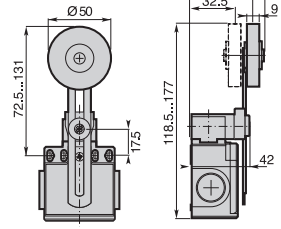
DP•T4•Z11	**DP•T42Z11**	**DP•T4•Z11**	**DP•T5•Z11**	**DP•T52Z11**
DP•T4•X11	**DP•T42X11**	**DP•T4•X11**	**DP•T5•X11**	**DP•T52X11**
DP•T4•Y11	**DP•T42Y11**	**DP•T4•Y11**	**DP•T5•Y11**	**DP•T52Y11**
DP•T4•W02	**DP•T42W02**	**DP•T4•W02**	**DP•T5•W02**	**DP•T52W02**
DP•T4•W20	**DP•T42W20**	**DP•T4•W20**	**DP•T5•W20**	**DP•T52W20**
DP•T4•Z02	**DP•T42Z02**	**DP•T4•Z02**	**DP•T5•Z02**	**DP•T52Z02**
DP•T4•X12P	**DP•T42X12P**	**DP•T4•X12P**	**DP•T5•X12P**	**DP•T52X12P**
DP•T4•X21P	**DP•T42X21P**	**DP•T4•X21P**	**DP•T5•X21P**	**DP•T52X21P**
DP•T4•W03P	**DP•T42W03P**	**DP•T4•W03P**	**DP•T5•W03P**	**DP•T52W03P**
0,125	**0,145**	**0,125**	**0,135**	**0,155**











• Travel, operation diagrams and technical data ..... pages 7, 9

Utilization precautions ..... pages 14, 15

DP_T Limit Switches

Double Insulation

Plastic Casing IP65 - 50 mm. width

Electrical Connection

DP1: two cable inlets for PG 13,5 Cable Gland

DP2: two cable inlets for PG11 Cable Gland with one plastic adapter PG11 - 1/2" NPT

DP3: two cable inlets for PG11 Cable Gland

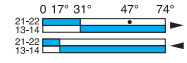
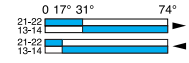
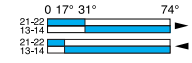
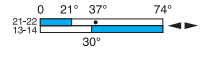
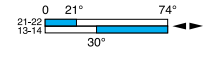
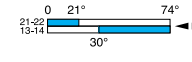
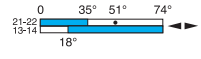
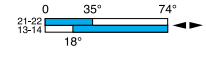
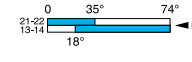
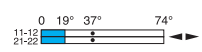
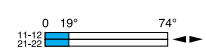
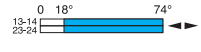
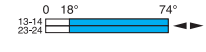
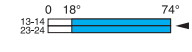
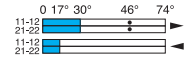
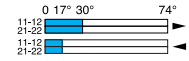
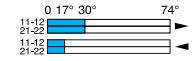
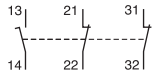
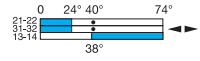
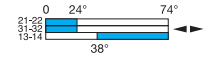
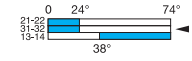
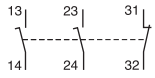
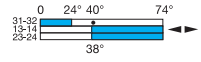
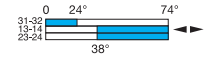
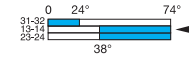
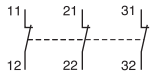
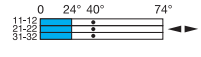
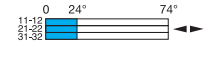
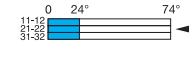
DP4: two cable inlets for M16 x 1,5 Cable Gland

DP5: two cable inlets for M20 x 1,5 Cable Gland

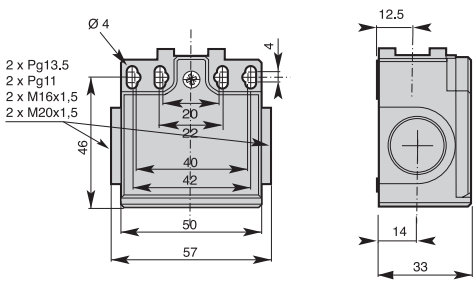
Operating Head Type

	T55 - Adjustable lever with adjustable Ø 50 rubber roller	T61 - Nylon actuator with stainless steel spring	T62 - Stainless steel spring actuator
Conformity / ⊖ (N.C. contact with positive opening operation)	⊖		
Max actuation speed [m/s]	1,5	1,5	1,5
Min. force [N] or torque [Nm]: actuation / positive opening operation	0,10 / 0,32	0,10 / –	0,10 / –

Additional Technical Datas

		T55	T61	T62
Z11 Snap Action Contacts (1NO + 1NC)		**Order Code** DP•T55Z11	DP•T61Z11	DP•T62Z11
		Operation Diagram 		
X11 Non overlapping Slow Action Contacts (1NO + 1NC)		**Order Code** DP•T55X11	DP•T61X11	DP•T62X11
		Operation Diagram 		
Y11 Overlapping Slow Action Contacts (1NO + 1NC)		**Order Code** DP•T55Y11	DP•T61Y11	DP•T62Y11
		Operation Diagram 		
W02 Slow Action Contacts (2NC)		**Order Code** DP•T55W02	DP•T61W02	DP•T62W02
		Operation Diagram 		
W20 Slow Action Contacts (2NO) ⊛		**Order Code** DP•T55W20	DP•T61W20	DP•T62W20
		Operation Diagram 		
Z02 Snap Action Contacts (2NC)		**Order Code** DP•T55Z02	DP•T61Z02	DP•T62Z02
		Operation Diagram 		
X12P Non overlapping Slow Action Contacts (1NO + 2NC)		**Order Code** DP•T55X12P	DP•T61X12P	DP•T62X12P
		Operation Diagram 		
X21P Non overlapping Slow Action Contacts (2NO + 1NC)		**Order Code** DP•T55X21P	DP•T61X21P	DP•T62X21P
		Operation Diagram 		
W03P Slow Action Contacts (3NC)		**Order Code** DP•T55W03P	DP•T61W03P	DP•T62W03P
		Operation Diagram 		
Weight (packing per unit)	**[kg]**	**0,155**	**0,135**	**0,135**

Dimensions (in mm)



• Travel, operation diagrams and technical data ..... pages 7, 9

Utilization precautions ..... pages 14, 15

DP_T Limit Switches

Double Insulation

Plastic Casing IP65 - 50 mm. width

T7• - Adjustable rod lever
T71: stainless steel rod Ø3
T72: fiberglass rod Ø3
T75: square steel rod 3x3

1,5
0,10 / 0,32

T7• - Adjustable Ø 6 rod lever
T73: nylon rod
T74: fiberglass rod

1,5
0,10 / 0,32

T91: Stainless steel spring multidirectional actuator

1,0
0,12 / –

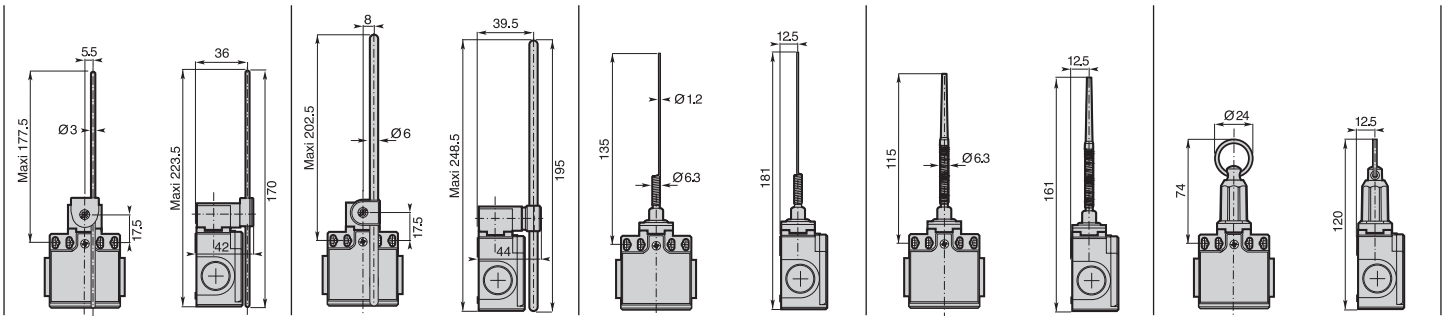
T92: Multidirectional nylon actuator with stainless steel spring

1,0
0,12 / –

T98: Pull action with ring

0,5
30 / –

DP•T7•Z11	**DP•T7•Z11**	**DP•T91Z11**	**DP•T92Z11**	**DP•T98Z11A**
DP•T7•X11	**DP•T7•X11**	**DP•T91X11**	**DP•T92X11**	**DP•T98X11A**
DP•T7•Y11	**DP•T7•Y11**	**DP•T91Y11**	**DP•T92Y11**	**DP•T98Y11A**
DP•T7•W02	**DP•T7•W02**	**DP•T91W02**	**DP•T92W02**	**DP•T98W02A**
DP•T7•W20	**DP•T7•W20**	**DP•T91W20**	**DP•T92W20**	**DP•T98W20A**
DP•T7•Z02	**DP•T7•Z02**	**DP•T91Z02**	**DP•T92Z02**	
DP•T7•X12P	**DP•T7•X12P**	**DP•T91X12P**	**DP•T92X12P**	
DP•T7•X21P	**DP•T7•X21P**	**DP•T91X21P**	**DP•T92X21P**	
DP•T7•W03P	**DP•T7•W03P**	**DP•T91W03P**	**DP•T92W03P**	
0,130	**0,145**	**0,110**	**0,115**	**0,145**



• Travel, operation diagrams and technical data ..... pages 7, 9

Utilization precautions ..... pages 14, 15

AM_F / AM_T Limit Switches

Metal Casing IP66 - 30 mm. width

Electrical Connection

AM1: one cable inlet for PG 13,5 Cable Gland

AM2: one cable inlet for 1/2" NPT Cable Gland

AM3: one cable inlet for PG11 Cable Gland

AM4: one cable inlet for M16 x 1,5 Cable Gland

AM5: one cable inlet for M20 x 1,5 Cable Gland

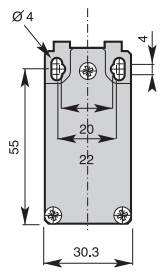
Operating Head Type

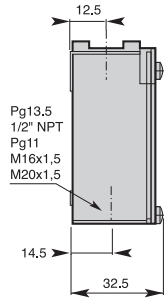
	F11 - Plain Metal plunger	F12 - Metal roller plunger	T14 - Metal plunger with dust protection cup
Conformity / ⊕ (N.C. contact with positive opening operation)	EN 50047 ⊕	EN 50047 ⊕	EN 50047 ⊕
Max actuation speed [m/s]	0,5	0,3	0,5
Min. force [N] or torque [Nm]: actuation / positive opening operation	15 / 30	12 / 30	15 / 30

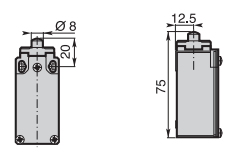
Additional Technical Datas

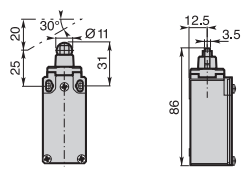
		F11 - Plain Metal plunger	F12 - Metal roller plunger	T14 - Metal plunger with dust protection cup
Z11 Snap Action Contacts (1NO + 1NC)	Order Code	AM•F11Z11	AM•F12Z11	AM•T14Z11
	Operation Diagram	0 1.3 2.5 4.1 5.6 mm	0 2.5 4.7 7.6 9.6 mm	0 1.3 2.5 4.1 5.6 mm
X11 Non overlapping Slow Action Contacts (1NO + 1NC)	Order Code	AM•F11X11	AM•F12X11	AM•T14X11
	Operation Diagram	0 1.6 3.2 5.6 mm; 2.5	0 3.2 6.0 9.6 mm; 4.6	0 1.6 3.2 5.6 mm; 2.5
Y11 Overlapping Slow Action Contacts (1NO + 1NC)	Order Code	AM•F11Y11	AM•F12Y11	AM•T14Y11
	Operation Diagram	0 2.9 4.5 5.6 mm; 1.5	0 5.3 8.2 9.6 mm; 3.0	0 2.9 4.5 5.6 mm; 1.5
W02 Slow Action Contacts (2NC)	Order Code	AM•F11W02	AM•F12W02	AM•T14W02
	Operation Diagram	0 1.5 3.1 5.6 mm	0 3.0 5.9 9.6 mm	0 1.5 3.1 5.6 mm
W20 Slow Action Contacts (2NO) ⊗	Order Code	AM•F11W20	AM•F12W20	AM•T14W20
	Operation Diagram	0 1.4 5.6 mm	0 2.8 9.6 mm	0 1.4 5.6 mm
Z02 Snap Action Contacts (2NC)	Order Code	AM•F11Z02	AM•F12Z02	AM•T14Z02
	Operation Diagram	0 1.3 2.4 4.0 5.6 mm	0 2.5 4.5 7.4 9.6 mm	0 1.3 2.4 4.0 5.6 mm
X12P Non overlapping Slow Action Contacts (1NO + 2NC)	Order Code	AM•F11X12P	AM•F12X12P	AM•T14X12P
	Operation Diagram	0 1.8 3.4 5.6 mm; 3.1	0 3.6 6.4 9.6 mm; 5.7	0 1.8 3.4 5.6 mm; 3.1
X21P Non overlapping Slow Action Contacts (2NO + 1NC)	Order Code	AM•F11X21P	AM•F12X21P	AM•T14X21P
	Operation Diagram	0 1.8 3.4 5.6 mm; 3.1	0 3.6 6.4 9.6 mm; 5.7	0 1.8 3.4 5.6 mm; 3.1
W03P Slow Action Contacts (3NC)	Order Code	AM•F11W03P	AM•F12W03P	AM•T14W03P
	Operation Diagram	0 1.8 3.4 5.6 mm	0 3.6 6.4 9.6 mm	0 1.8 3.4 5.6 mm
Weight (packing per unit)	[kg]	0,180	0,190	0,165

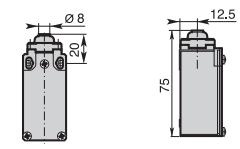
Dimensions (in mm)











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Utilization precautions ..... pages 14, 15

AM_F / AM_T Limit Switches

Metal Casing IP66 - 30 mm. width

T3• - Plastic roller lever
T30: on plastic plunger
T31: on metal plunger

EN 50047
1,0
7/24

T3• - Plastic roller lever
T32: on metal plunger
T34: on plastic plunger

1,0
7/24

T38 - Adjustable plastic roller lever on metal plunger
T39 - Same as above with dust protection cup

EN 50047
1,0
7/24

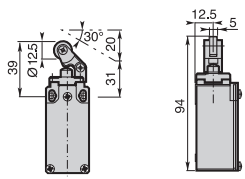
F4• - Ø 18 roller lever
F41: nylon roller
F43: metal roller

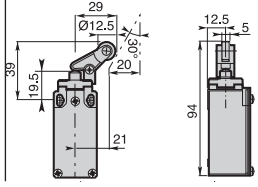
EN 50047
1,5
0,10 / 0,32

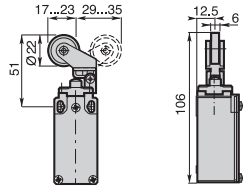
F42 - Ø 50 rubber roller lever

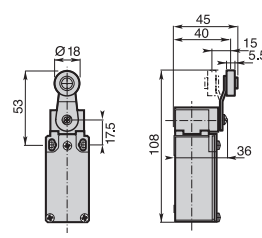
1,5
0,10 / 0,32

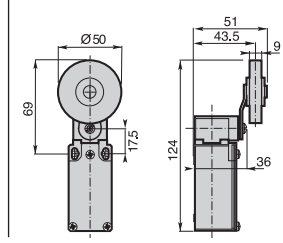
AM•T3•Z11	**AM•T3•Z11**	**AM•T3•Z11**	**AM•F4•Z11**	**AM•F42Z11**
AM•T3•X11	**AM•T3•X11**	**AM•T3•X11**	**AM•F4•X11**	**AM•F42X11**
AM•T3•Y11	**AM•T3•Y11**	**AM•T3•Y11**	**AM•F4•Y11**	**AM•F42Y11**
AM•T3•W02	**AM•T3•W02**	**AM•T3•W02**	**AM•F4•W02**	**AM•F42W02**
AM•T3•W20	**AM•T3•W20**	**AM•T3•W20**	**AM•F4•W20**	**AM•F42W20**
AM•T3•Z02	**AM•T3•Z02**	**AM•T3•Z02**	**AM•F4•Z02**	**AM•F42Z02**
AM•T3•X12P	**AM•T3•X12P**	**AM•T3•X12P**	**AM•F4•X12P**	**AM•F42X12P**
AM•T3•X21P	**AM•T3•X21P**	**AM•T3•X21P**	**AM•F4•X21P**	**AM•F42X21P**
AM•T3•W03P	**AM•T3•W03P**	**AM•T3•W03P**	**AM•F4•W03P**	**AM•F42W03P**
0,170	**0,175**	**0,175**	**0,235**	**0,255**











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AM_F / AM_T Limit Switches

Metal Casing IP66 - 30 mm. width

Electrical Connection

AM1: one cable inlet for PG 13,5 Cable Gland

AM2: one cable inlet for 1/2" NPT Cable Gland

AM3: one cable inlet for PG11 Cable Gland

AM4: one cable inlet for M16 x 1,5 Cable Gland

AM5: one cable inlet for M20 x 1,5 Cable Gland

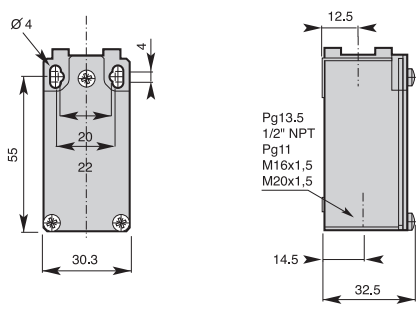
Operating Head Type

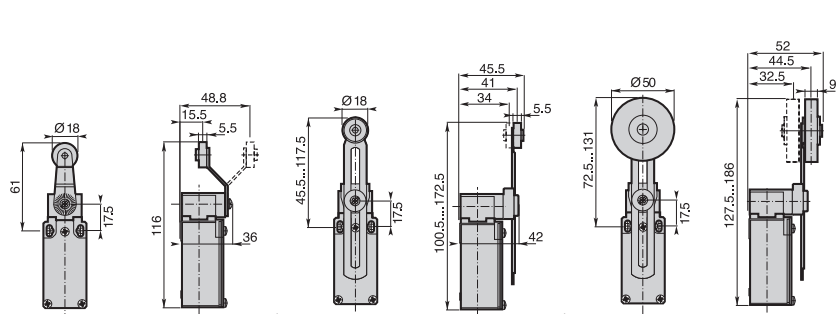
	F4• - Ø 18 roller lever F45: nylon roller F46: metal roller	**F5• - Adjustable lever with Ø 18 roller** F51: nylon roller F53: metal roller	**F52 - Adjustable Ø 50 rubber roller lever**
Conformity / ⊕ (N.C. contact with positive opening operation)	⊕	⊕	⊕
Max actuation speed [m/s]	1,5	1,5	1,5
Min. force [N] or torque [Nm]: actuation / positive opening operation	0,10 / 0,32	0,10 / 0,32	0,10 / 0,32

Additional Technical Datas

		F4• - Ø 18 roller lever	**F5• - Adjustable lever with Ø 18 roller**	**F52 - Adjustable Ø 50 rubber roller lever**
Z11 Snap Action Contacts (1NO + 1NC)	**Order Code**	**AM•F4•Z11**	**AM•F5•Z11**	**AM•F52Z11**
13 21 / 14 22	Operation Diagram	0 17° 31° 47° 74°	0 17° 31° 47° 74°	0 17° 31° 47° 74°
X11 Non overlapping Slow Action Contacts (1NO + 1NC)	**Order Code**	**AM•F4•X11**	**AM•F5•X11**	**AM•F52X11**
13 21 / 14 22	Operation Diagram	0 21° 37° 74° 30°	0 21° 37° 74° 30°	0 21° 37° 74° 30°
Y11 Overlapping Slow Action Contacts (1NO + 1NC)	**Order Code**	**AM•F4•Y11**	**AM•F5•Y11**	**AM•F52Y11**
13 21 / 14 22	Operation Diagram	0 35° 51° 74° 18°	0 35° 51° 74° 18°	0 35° 51° 74° 18°
W02 Slow Action Contacts (2NC)	**Order Code**	**AM•F4•W02**	**AM•F5•W02**	**AM•F52W02**
11 21 / 12 22	Operation Diagram	0 19° 37° 74°	0 19° 37° 74°	0 19° 37° 74°
W20 Slow Action Contacts (2NO) ⊛	**Order Code**	**AM•F4•W20**	**AM•F5•W20**	**AM•F52W20**
13 23 / 14 24	Operation Diagram	0 18° 74°	0 18° 74°	0 18° 74°
Z02 Snap Action Contacts (2NC)	**Order Code**	**AM•F4•Z02**	**AM•F5•Z02**	**AM•F52Z02**
11 21 / 12 22	Operation Diagram	0 17° 30° 46° 74°	0 17° 30° 46° 74°	0 17° 30° 46° 74°
X12P Non overlapping Slow Action Contacts (1NO + 2NC)	**Order Code**	**AM•F4•X12P**	**AM•F5•X12P**	**AM•F52X12P**
13 21 31 / 14 22 32	Operation Diagram	0 24° 40° 74° 38°	0 24° 40° 74° 38°	0 24° 40° 74° 38°
X21P Non overlapping Slow Action Contacts (2NO + 1NC)	**Order Code**	**AM•F4•X21P**	**AM•F5•X21P**	**AM•F52X21P**
13 23 31 / 14 24 32	Operation Diagram	0 24° 40° 74° 38°	0 24° 40° 74° 38°	0 24° 40° 74° 38°
W03P Slow Action Contacts (3NC)	**Order Code**	**AM•F4•W03P**	**AM•F5•W03P**	**AM•F52W03P**
11 21 31 / 12 22 32	Operation Diagram	0 24° 40° 74°	0 24° 40° 74°	0 24° 40° 74°
Weight (packing per unit)	**[kg]**	**0,250**	**0,250**	**0,265**

Dimensions (in mm)





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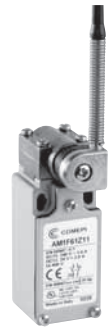
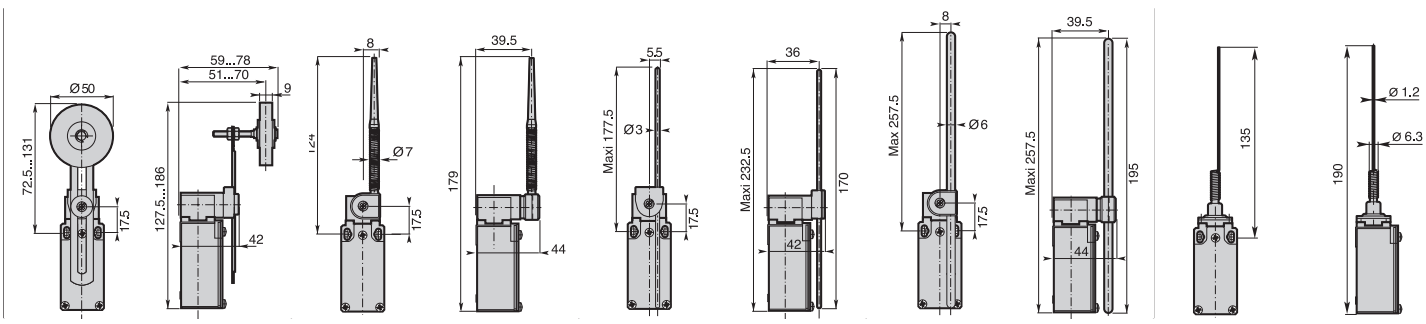
AM_F / AM_T Limit Switches

Metal Casing IP66 - 30 mm. width

				
F55 - Adjustable lever with adjustable Ø 50 rubber roller	**F61 - Nylon actuator with stainless steel spring**	**F7• - Adjustable rod lever** F71: stainless steel rod Ø3 F72: fiberglass rod Ø3 F75: square steel rod 3x3	**F7• - Adjustable Ø 6 rod lever** F73: nylon rod F74: fiberglass rod	**T91: Stainless steel spring multidirectional actuator**
1,5 0,10 / 0,32	1,5 0,10 / –	1,5 0,10 / 0,32	1,5 0,10 / 0,32	1,0 0,12 / –
AM•F55Z11	**AM•F61Z11**	**AM•F7•Z11**	**AM•F7•Z11**	**AM•F91Z11**
AM•F55X11	**AM•F61X11**	**AM•F7•X11**	**AM•F7•X11**	**AM•F91X11**
AM•F55Y11	**AM•F61Y11**	**AM•F7•Y11**	**AM•F7•Y11**	**AM•F91Y11**
AM•F55W02	**AM•F61W02**	**AM•F7•W02**	**AM•F7•W02**	**AM•F91W02**
AM•F55W20	**AM•F61W20**	**AM•F7•W20**	**AM•F7•W20**	**AM•F91W20**
AM•F55Z02	**AM•F61Z02**	**AM•F7•Z02**	**AM•F7•Z02**	**AM•F91Z02**
AM•F55X12P	**AM•F61X12P**	**AM•F7•X12P**	**AM•F7•X12P**	**AM•F91X12P**
AM•F55X21P	**AM•F61X21P**	**AM•F7•X21P**	**AM•F7•X21P**	**AM•F91X21P**
AM•F55W03P	**AM•F61W03P**	**AM•F7•W03P**	**AM•F7•W03P**	**AM•F91W03P**
0,265	**0,245**	**0,245**	**0,255**	**0,175**



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AM_F / AM_T Limit Switches

Metal Casing IP66 - 30 mm. width

Electrical Connection

AM1: one cable inlet for PG 13,5 Cable Gland

AM2: one cable inlet for 1/2" NPT Cable Gland

AM3: one cable inlet for PG11 Cable Gland

AM4: one cable inlet for M16 x 1,5 Cable Gland

AM5: one cable inlet for M20 x 1,5 Cable Gland

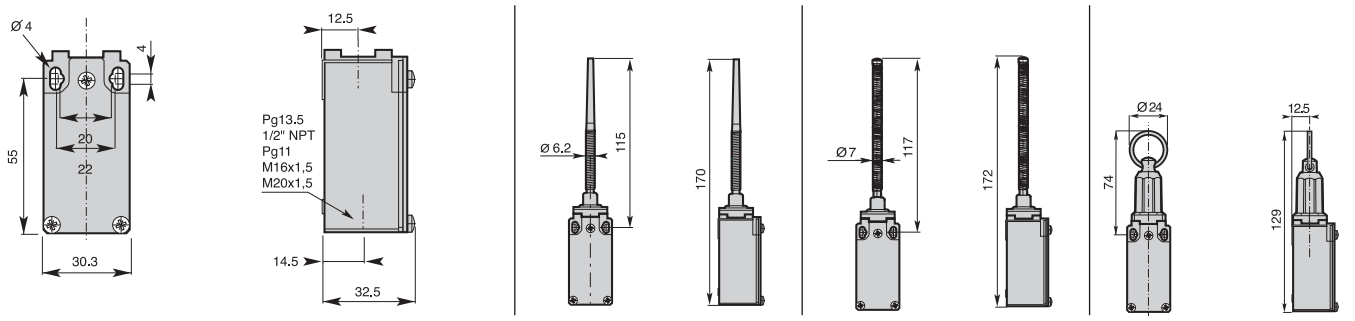
Operating Head Type

	T92: Multidirectional nylon actuator with stainless steel spring	T93: Stainless steel spring multidirectional actuator	T98: Pull action with ring
Conformity / ⊖ (N.C. contact with positive opening operation)			
Max actuation speed [m/s]	1,0	1,0	0,5
Min. force [N] or torque [Nm]: actuation / positive opening operation	0,12 / –	0,12 / –	30 / –

Additional Technical Datas

		T92: Multidirectional nylon actuator with stainless steel spring	T93: Stainless steel spring multidirectional actuator	T98: Pull action with ring
Z11 Snap Action Contacts (1NO + 1NC)	Order Code	AM•T92Z11	AM•T93Z11	AM•T98Z11A
	Operation Diagram	0 12° 23°	0 12° 23°	0 0.9 2.0 5.6 mm
X11 Non overlapping Slow Action Contacts (1NO + 1NC)	Order Code	AM•T92X11	AM•T93X11	AM•T98X11A
	Operation Diagram	0 14° 21°	0 14° 21°	0 1.0 5.6 mm 1.9
Y11 Overlapping Slow Action Contacts (1NO + 1NC)	Order Code	AM•T92Y11	AM•T93Y11	AM•T98Y11A
	Operation Diagram	0 25° 12°	0 25° 12°	0 2.0 5.6 mm 0.6
W02 Slow Action Contacts (2NC)	Order Code	AM•T92W02	AM•T93W02	AM•T98W02A
	Operation Diagram	0 14°	0 14°	0 2.0 5.6 mm
W20 Slow Action Contacts (2NO) ⊛	Order Code	AM•T92W20	AM•T93W20	AM•T98W20A
	Operation Diagram	0 13°	0 13°	0 1.8 5.6 mm
Z02 Snap Action Contacts (2NC)	Order Code	AM•T92Z02	AM•T93Z02	
	Operation Diagram	0 12° 22°	0 12° 22°	
X12P Non overlapping Slow Action Contacts (1NO + 2NC)	Order Code	AM•T92X12P	AM•T93X12P	
	Operation Diagram	0 16° 26°	0 16° 26°	
X21P Non overlapping Slow Action Contacts (2NO + 1NC)	Order Code	AM•T92X21P	AM•T93X21P	
	Operation Diagram	0 16° 26°	0 16° 26°	
W03P Slow Action Contacts (3NC)	Order Code	AM•T92W03P	AM•T93W03P	
	Operation Diagram	0 16°	0 16°	
Weight (packing per unit)	[kg]	0,180	0,185	0,210

Dimensions (in mm)



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DM_F / DM_T Limit Switches

Metal Casing IP66 - 50 mm. width

Electrical Connection

DM1: three cable inlets for PG 13,5 Cable Gland

DM2: three cable inlets for 1/2" NPT Cable Gland

DM3: three cable inlets for PG11 Cable Gland

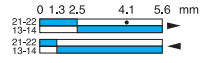
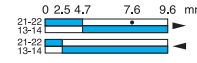
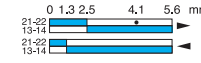
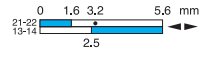
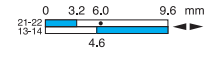
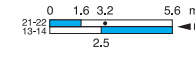
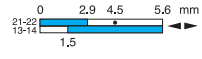
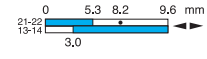
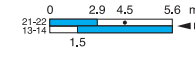
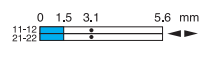
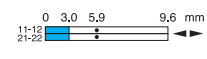
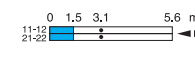
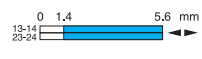
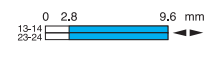
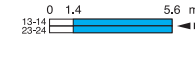
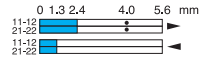
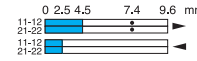
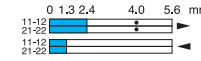
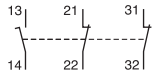
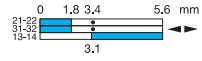
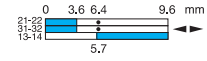
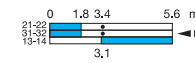
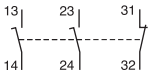
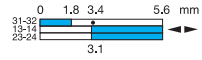
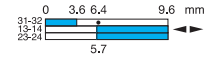
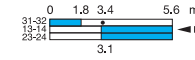
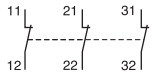
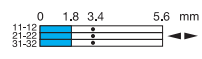
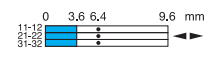
DM4: three cable inlets for M16 x 1,5 Cable Gland

DM5: three cable inlets for M20 x 1,5 Cable Gland

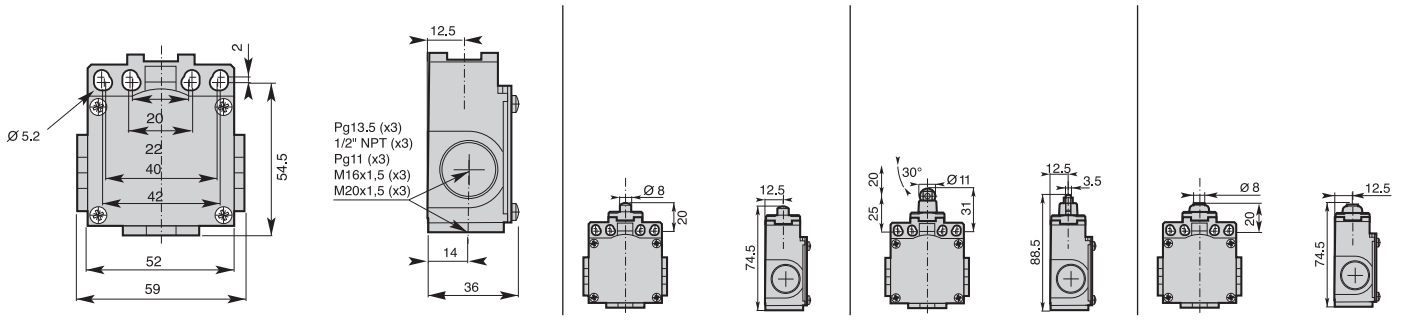
Operating Head Type

	F11 - Plain Metal plunger	F12 - Metal roller plunger	T14 - Metal plunger with dust protection cup
Conformity / ⊕ (N.C. contact with positive opening operation)	⊕	⊕	⊕
Max actuation speed [m/s]	0,5	0,3	0,5
Min. force [N] or torque [Nm]: actuation / positive opening operation	15 / 30	12 / 30	15 / 30

Additional Technical Datas

		F11 - Plain Metal plunger	F12 - Metal roller plunger	T14 - Metal plunger with dust protection cup
Z11 Snap Action Contacts (1NO + 1NC)		**Order Code**	**DM•F11Z11**	**DM•F12Z11**	**DM•T14Z11**
		Operation Diagram			
X11 Non overlapping Slow Action Contacts (1NO + 1NC)		**Order Code**	**DM•F11X11**	**DM•F12X11**	**DM•T14X11**
		Operation Diagram			
Y11 Overlapping Slow Action Contacts (1NO + 1NC)		**Order Code**	**DM•F11Y11**	**DM•F12Y11**	**DM•T14Y11**
		Operation Diagram			
W02 Slow Action Contacts (2NC)		**Order Code**	**DM•F11W02**	**DM•F12W02**	**DM•T14W02**
		Operation Diagram			
W20 Slow Action Contacts (2NO)		**Order Code**	**DM•F11W20**	**DM•F12W20**	**DM•T14W20**
		Operation Diagram			
Z02 Snap Action Contacts (2NC)		**Order Code**	**DM•F11Z02**	**DM•F12Z02**	**DM•T14Z02**
		Operation Diagram			
X12P Non overlapping Slow Action Contacts (1NO + 2NC)		**Order Code**	**DM•F11X12P**	**DM•F12X12P**	**DM•T14X12P**
		Operation Diagram			
X21P Non overlapping Slow Action Contacts (2NO + 1NC)		**Order Code**	**DM•F11X21P**	**DM•F12X21P**	**DM•T14X21P**
		Operation Diagram			
W03P Slow Action Contacts (3NC)		**Order Code**	**DM•F11W03P**	**DM•F12W03P**	**DM•T14W03P**
		Operation Diagram			
Weight (packing per unit)		**[kg]**	**0,270**	**0,280**	**0,255**

Dimensions (in mm)



• Travel, operation diagrams and technical data .... pages 7, 11

Utilization precautions ..... pages 14, 15

DM_F / DM_T Limit Switches

Metal Casing IP66 - 50 mm. width

Electrical Connection

DM1: three cable inlets for PG 13,5 Cable Gland

DM2: three cable inlets for 1/2" NPT Cable Gland

DM3: three cable inlets for PG11 Cable Gland

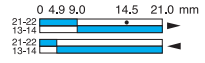
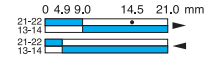
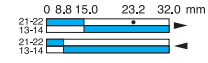
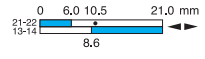
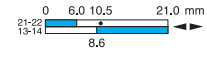
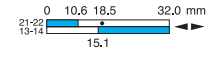
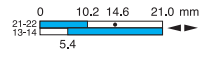
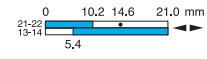
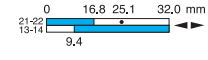
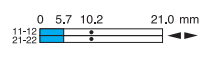
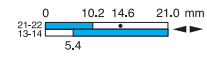
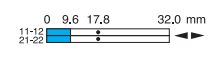
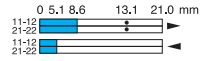
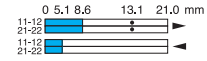
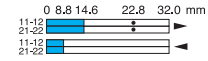
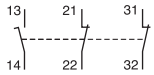
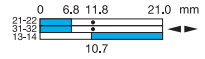
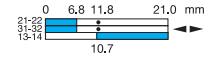
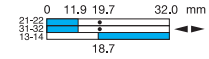
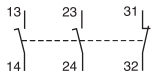
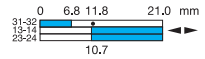
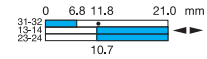
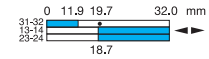
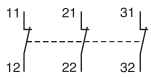
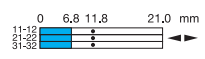
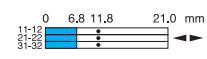
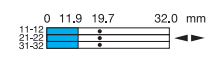
DM4: three cable inlets for M16 x 1,5 Cable Gland

DM5: three cable inlets for M20 x 1,5 Cable Gland

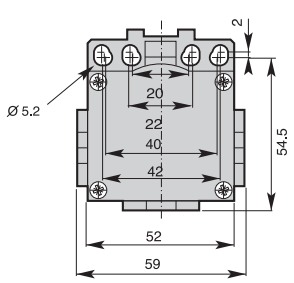
Operating Head Type

	T3• - Plastic roller lever T30: on plastic plunger T31: on metal plunger	**T35 - Plastic roller lever on metal plunger with dust protection cup**	**T38 - Adjustable plastic roller lever on metal plunger** **T39 - Same as above with dust protection cup**
Conformity / ⊖ (N.C. contact with positive opening operation)	⊖	⊖	⊖
Max actuation speed [m/s]	1,0	1,0	1,0
Min. force [N] or torque [Nm]: actuation / positive opening operation	7 / 24	7 / 24	7 / 24

Additional Technical Datas

		T3• - Plastic roller lever T30: on plastic plunger T31: on metal plunger	**T35 - Plastic roller lever on metal plunger with dust protection cup**	**T38 - Adjustable plastic roller lever on metal plunger** **T39 - Same as above with dust protection cup**
Z11 Snap Action Contacts (1NO + 1NC)	**Order Code**	**DM•T3•Z11**	**DM•T35Z11**	**DM•T3•Z11**
	Operation Diagram			
X11 Non overlapping Slow Action Contacts (1NO + 1NC)	**Order Code**	**DM•T3•X11**	**DM•T35X11**	**DM•T3•X11**
	Operation Diagram			
Y11 Overlapping Slow Action Contacts (1NO + 1NC)	**Order Code**	**DM•T3•Y11**	**DM•T35Y11**	**DM•T3•Y11**
	Operation Diagram			
W02 Slow Action Contacts (2NC)	**Order Code**	**DM•T3•W02**	**DM•T35W02**	**DM•T3•W02**
	Operation Diagram			
W20 Slow Action Contacts (2NO) ⊗	**Order Code**	**DM•T3•W20**	**DM•T35W20**	**DM•T3•W20**
	Operation Diagram			
Z02 Snap Action Contacts (2NC)	**Order Code**	**DM•T3•Z02**	**DM•T35Z02**	**DM•T3•Z02**
	Operation Diagram			
X12P Non overlapping Slow Action Contacts (1NO + 2NC)	**Order Code**	**DM•T3•X12P**	**DM•T35X12P**	**DM•T3•X12P**
	Operation Diagram			
X21P Non overlapping Slow Action Contacts (2NO + 1NC)	**Order Code**	**DM•T3•X21P**	**DM•T35X21P**	**DM•T3•X21P**
	Operation Diagram			
W03P Slow Action Contacts (3NC)	**Order Code**	**DM•T3•W03P**	**DM•T35W03P**	**DM•T3•W03P**
	Operation Diagram			
Weight (packing per unit	**[kg]**	**0,260**	**0,260**	**0,265**

Dimensions (in mm)



• Travel, operation diagrams and technical data .... pages 7, 11

Utilization precautions ..... pages 14, 15

DM_F / DM_T Limit Switches

Metal Casing IP66 - 50 mm. width

F4• - Ø 18 roller lever
F41: nylon roller
F43: metal roller

1,5
0,10 / 0,32

F42 - Ø 50 rubber roller lever

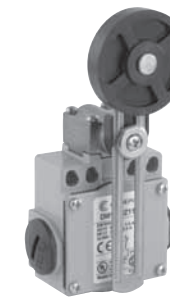
1,5
0,10 / 0,32

F4• - Ø 18 roller lever
F45: nylon roller
F46: metal roller

1,5
0,10 / 0,32

F5• - Adjustable lever with Ø 18 roller
F51: nylon roller
F53: metal roller

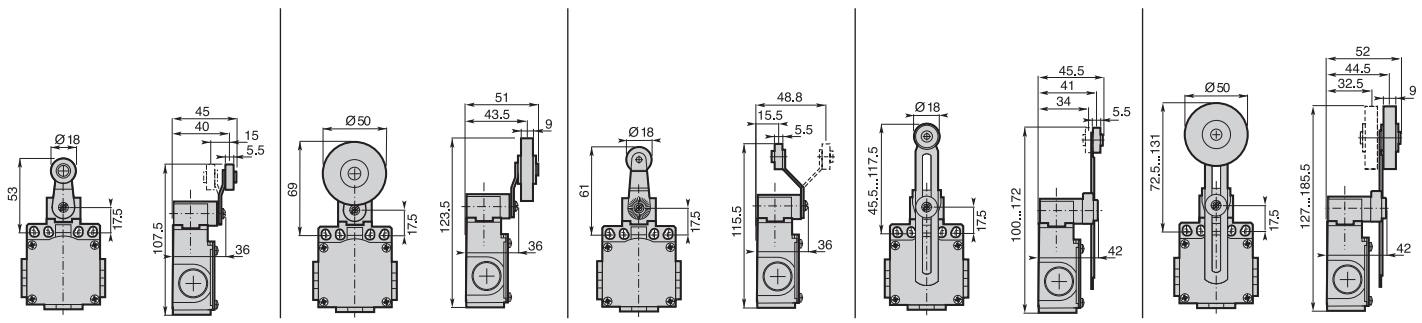
1,5
0,10 / 0,32



F52 - Adjustable lever with Ø 50 rubber roller

1,5
0,10 / 0,32

DM•F4•Z11	**DM•F42Z11**	**DM•F4•Z11**	**DM•F5•Z11**	**DM•F52Z11**
DM•F4•X11	**DM•F42X11**	**DM•F4•X11**	**DM•F5•X11**	**DM•F52X11**
DM•F4•Y11	**DM•F42Y11**	**DM•F4•Y11**	**DM•F5•Y11**	**DM•F52Y11**
DM•F4•W02	**DM•F42W02**	**DM•F4•W02**	**DM•F5•W02**	**DM•F52W02**
DM•F4•W20	**DM•F42W20**	**DM•F4•W20**	**DM•F5•W20**	**DM•F52W20**
DM•F4•Z02	**DM•F42Z02**	**DM•F4•Z02**	**DM•F5•Z02**	**DM•F52Z02**
DM•F4•X12P	**DM•F42X12P**	**DM•F4•X12P**	**DM•F5•X12P**	**DM•F52X12P**
DM•F4•X21P	**DM•F42X21P**	**DM•F4•X21P**	**DM•F5•X21P**	**DM•F52X21P**
DM•F4•W03P	**DM•F42W03P**	**DM•F4•W03P**	**DM•F5•W03P**	**DM•F52W03P**
0,325	**0,345**	**0,340**	**0,335**	**0,355**



• Travel, operation diagrams and technical data .... pages 7, 11

Utilization precautions ..... pages 14, 15

DM_F / DM_T Limit Switches

Metal Casing IP66 - 50 mm. width

Electrical Connection

DM1: three cable inlets for PG 13,5 Cable Gland

DM2: three cable inlets for 1/2" NPT Cable Gland

DM3: three cable inlets for PG11 Cable Gland

DM4: three cable inlets for M16 x 1,5 Cable Gland

DM5: three cable inlets for M20 x 1,5 Cable Gland

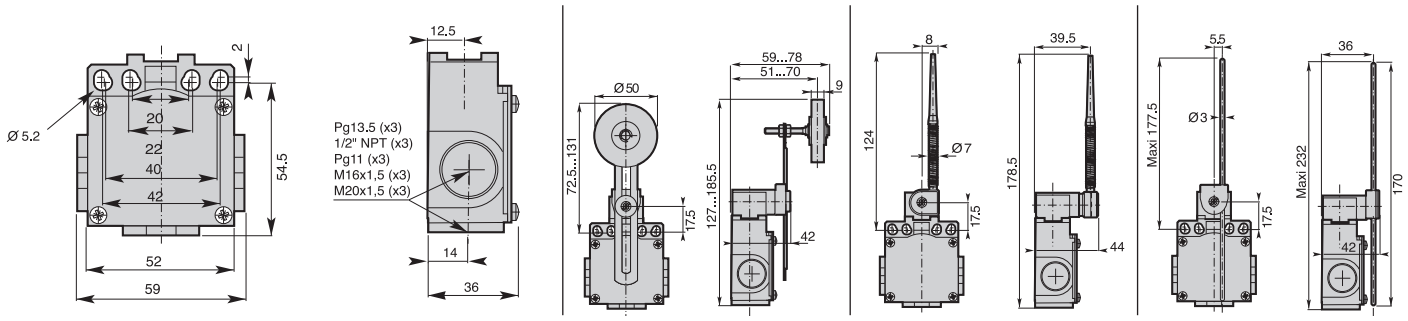
Operating Head Type

	F55 - Adjustable lever with adjustable Ø 50 rubber roller	F61 - Nylon actuator with stainless steel spring	F7• - Adjustable rod lever F71: stainless steel rod Ø3 F72: fiberglass rod Ø3 F75: square steel rod 3x3
Conformity / ⊖ (N.C. contact with positive opening operation)	⊖		⊖
Max actuation speed [m/s]	1,5	1,5	1,5
Min. force [N] or torque [Nm]: actuation / positive opening operation	0,10 / 0,32	0,10 / –	0,10 / 0,32

Additional Technical Datas

		DM•F55	DM•F61	DM•F7•
Z11 Snap Action Contacts (1NO + 1NC)	Order Code	**DM•F55Z11**	**DM•F61Z11**	**DM•F7•Z11**
	Operation Diagram	0 17° 31° 47° 74°	0 17° 31° 74°	0 17° 31° 47° 74°
X11 Non overlapping Slow Action Contacts (1NO + 1NC)	Order Code	**DM•F55X11**	**DM•F61X11**	**DM•F7•X11**
	Operation Diagram	0 21° 37° 74° (30°)	0 21° 74° (30°)	0 21° 37° 74° (30°)
Y11 Overlapping Slow Action Contacts (1NO + 1NC)	Order Code	**DM•F55Y11**	**DM•F61Y11**	**DM•F7•Y11**
	Operation Diagram	0 35° 51° 74° (18°)	0 35° 74° (18°)	0 35° 51° 74° (18°)
W02 Slow Action Contacts (2NC)	Order Code	**DM•F55W02**	**DM•F61W02**	**DM•F7•W02**
	Operation Diagram	0 19° 37° 74°	0 19° 74°	0 19° 37° 74°
W20 Slow Action Contacts (2NO) ⊛	Order Code	**DM•F55W20**	**DM•F61W20**	**DM•F7•W20**
	Operation Diagram	0 18° 74°	0 18° 74°	0 18° 74°
Z02 Snap Action Contacts (2NC)	Order Code	**DM•F55Z02**	**DM•F61Z02**	**DM•F7•Z02**
	Operation Diagram	0 17° 30° 46° 74°	0 17° 30° 74°	0 17° 30° 46° 74°
X12P Non overlapping Slow Action Contacts (1NO + 2NC)	Order Code	**DM•F55X12P**	**DM•F61X12P**	**DM•F7•X12P**
	Operation Diagram	0 24° 40° 74° (38°)	0 24° 74° (38°)	0 24° 40° 74° (38°)
X21P Non overlapping Slow Action Contacts (2NO + 1NC)	Order Code	**DM•F55X21P**	**DM•F61X21P**	**DM•F7•X21P**
	Operation Diagram	0 24° 40° 74° (38°)	0 24° 74° (38°)	0 24° 40° 74° (38°)
W03P Slow Action Contacts (3NC)	Order Code	**DM•F55W03P**	**DM•F61W03P**	**DM•F7•W03P**
	Operation Diagram	0 24° 40° 74°	0 24° 74°	0 24° 40° 74°
Weight (packing per unit)	**[kg]**	**0,355**	**0,305**	**0,380**

Dimensions (in mm)



• Travel, operation diagrams and technical data .... pages 7, 11

Utilization precautions ..... pages 14, 15

DM_F / DM_T Limit Switches

Metal Casing IP66 - 50 mm. width

F7• - Adjustable Ø 6 rod lever
F73: nylon rod
F74: fiberglass rod

1,5
0,10 / 0,32

T91: Stainless steel spring multidirectional actuator

1,0
0,12 / –

T92: Multidirectional nylon actuator with stainless steel spring

1,0
0,12 / –

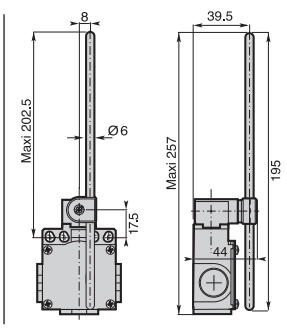
T93: Stainless steel spring multidirectional actuator

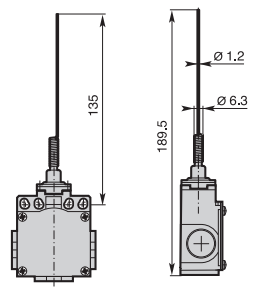
1,0
0,12 / –

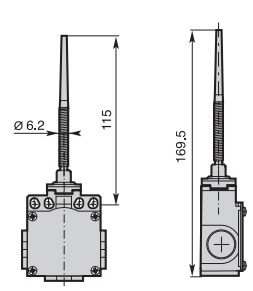
T98: Pull action with ring

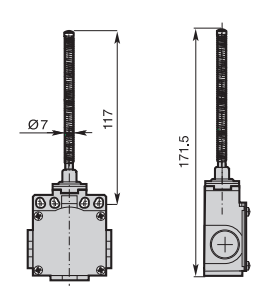
0,5
30 / –

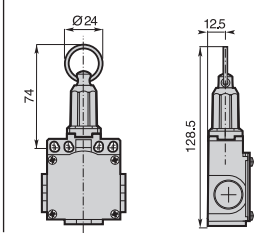
DM•F7•Z11	**DM•T91Z11**	**DM•T92Z11**	**DM•T93Z11**	**DM•T98Z11A**
DM•F7•X11	**DM•T91X11**	**DM•T92X11**	**DM•T93X11**	**DM•T98X11A**
DM•F7•Y11	**DM•T91Y11**	**DM•T92Y11**	**DM•T93Y11**	**DM•T98Y11A**
DM•F7•W02	**DM•T91W02**	**DM•T92W02**	**DM•T93W02**	**DM•T98W02A**
DM•F7•W20	**DM•T91W20**	**DM•T92W20**	**DM•T93W20**	**DM•T98W20A**
DM•F7•Z02	**DM•T91Z02**	**DM•T92Z02**	**DM•T93Z02**	
DM•F7•X12P	**DM•T91X12P**	**DM•T92X12P**	**DM•T93X12P**	
DM•F7•X21P	**DM•T91X21P**	**DM•T92X21P**	**DM•T93X21P**	
DM•F7•W03P	**DM•T91W03P**	**DM•T92W03P**	**DM•T93W03P**	
0,390	**0,265**	**0,270**	**0,275**	**0,300**











• Travel, operation diagrams and technical data .... pages 7, 11

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BP_H Limit Switches

Double Insulation

Plastic Casing IP65 - 40 mm. width

Electrical Connection

BP1: one cable inlet for PG 13,5 Cable Gland

BP2: one cable inlet for 1/2" NPT Cable Gland

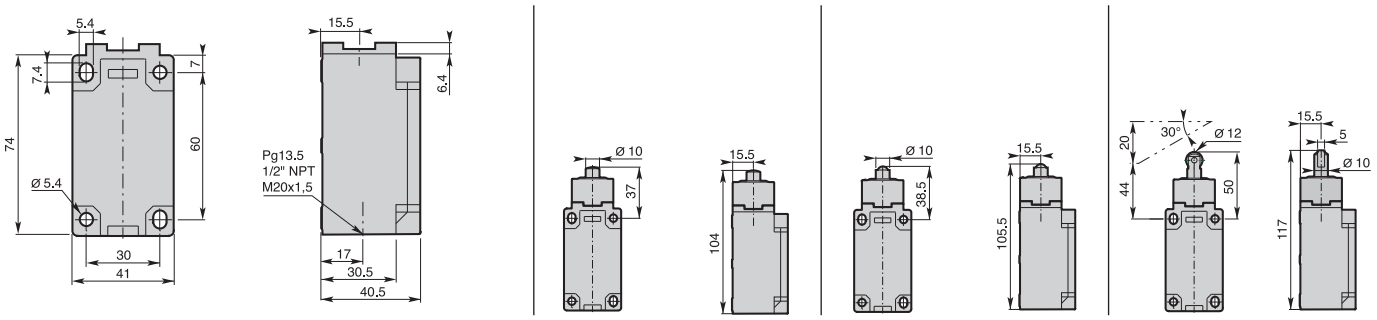
BP5: one cable inlet for M20 x 1,5 Cable Gland

Operating Head Type	H11 - Plain steel plunger	H12 - Steel ball plunger	H13 - Steel roller plunger
Conformity / ⊕ (N.C. contact with positive opening operation)	EN 50041 ⊕	EN 50041 ⊕	EN 50041 ⊕
Max actuation speed [m/s]	0,5	0,5	0,5
Min. force [N] or torque [Nm]: actuation / positive opening operation	14 / 40	14 / 40	14 / 40

Additional Technical Datas

Z11 Snap Action Contacts (1NO + 1NC)	13 21 / 14 22	**Order Code**	**BP•H11Z11**	**BP•H12Z11**	**BP•H13Z11**
		Operation Diagram	0 1.0 2.2 3.8 5.9 mm	0 1.0 2.2 3.8 5.9 mm	0 2.4 4.6 7.5 10.5 mm
X11 Non overlapping Slow Action Contacts (1NO + 1NC)	13 21 / 14 22	**Order Code**	**BP•H11X11**	**BP•H12X11**	**BP•H13X11**
		Operation Diagram	0 1.3 2.9 5.9 mm, 2.1	0 1.3 2.9 5.9 mm, 2.1	0 3.1 6.0 10.5 mm, 4.4
Y11 Overlapping Slow Action Contacts (1NO + 1NC)	13 21 / 14 22	**Order Code**	**BP•H11Y11**	**BP•H12Y11**	**BP•H13Y11**
		Operation Diagram	0 2.4 4.0 5.9 mm, 1.1	0 2.4 4.0 5.9 mm, 1.1	0 5.1 8.0 10.5 mm, 2.8
W02 Slow Action Contacts (2NC)	11 21 / 12 22	**Order Code**	**BP•H11W02**	**BP•H12W02**	**BP•H13W02**
		Operation Diagram	0 1.1 2.7 5.9 mm	0 1.1 2.7 5.9 mm	0 2.8 5.7 10.5 mm
W20 Slow Action Contacts (2NO) ⊗	13 23 / 14 24	**Order Code**	**BP•H11W20**	**BP•H12W20**	**BP•H13W20**
		Operation Diagram	0 1.0 5.9 mm	0 1.0 5.9 mm	0 2.6 10.5 mm
Z02 Snap Action Contacts (2NC)	11 21 / 12 22	**Order Code**	**BP•H11Z02**	**BP•H12Z02**	**BP•H13Z02**
		Operation Diagram	0 1.0 2.0 3.6 5.9 mm	0 1.0 2.0 3.6 5.9 mm	0 2.4 4.4 7.3 10.5 mm
X12 Non overlapping Slow Action Contacts (1NO + 2NC)	13 21 31 / 14 22 32	**Order Code**	**BP•H11X12**	**BP•H12X12**	**BP•H13X12**
		Operation Diagram	0 0.9 2.4 5.9 mm, 2.6	0 0.9 2.4 5.9 mm, 2.6	0 2.8 5.3 10.5 mm, 5.5
X21 Non overlapping Slow Action Contacts (2NO + 1NC)	13 23 31 / 14 24 32	**Order Code**	**BP•H11X21**	**BP•H12X21**	**BP•H13X21**
		Operation Diagram	0 1.0 2.5 5.9 mm, 2.6	0 1.0 2.5 5.9 mm, 2.6	0 2.9 5.4 10.5 mm, 5.5
W03 Simultaneous Slow Action Contacts (3NC)	11 21 31 / 12 22 32	**Order Code**	**BP•H11W03**	**BP•H12W03**	**BP•H13W03**
		Operation Diagram	0 0.9 2.4 5.9 mm	0 0.9 2.4 5.9 mm	0 2.8 5.3 10.5 mm
W30 Simultaneous Slow Action Contacts (3NO) ⊗	13 23 33 / 14 24 34	**Order Code**	**BP•H11W30**	**BP•H12W30**	**BP•H13W30**
		Operation Diagram	0 1.3 5.9 mm	0 1.3 5.9 mm	0 3.3 10.5 mm
Weight (packing per unit)	**[kg]**		**0,145**	**0,145**	**0,150**

Dimensions (in mm)



• Travel, operation diagrams and technical data ..... pages 7, 9

Utilization precautions ..... pages 14, 15

BP_H Limit Switches

Double Insulation

Plastic Casing IP65 - 40 mm. width

H14 - Plain steel plunger with dust protection cup

EN 50041
0,5
14 / 40

H19 - Steel roller plunger with dust protection cup

EN 50041
0,5
14 / 40

H3• - One way lever

H31: Ø22 nylon roller
H32: Ø22 stainless steel roller
H33: Ø22 steel ball bearing

1,0
8 / 30

H3• - One way lever with dust protection cup

H35: Ø22 nylon roller
H36: Ø22 stainless steel roller
H37: Ø22 steel ball bearing

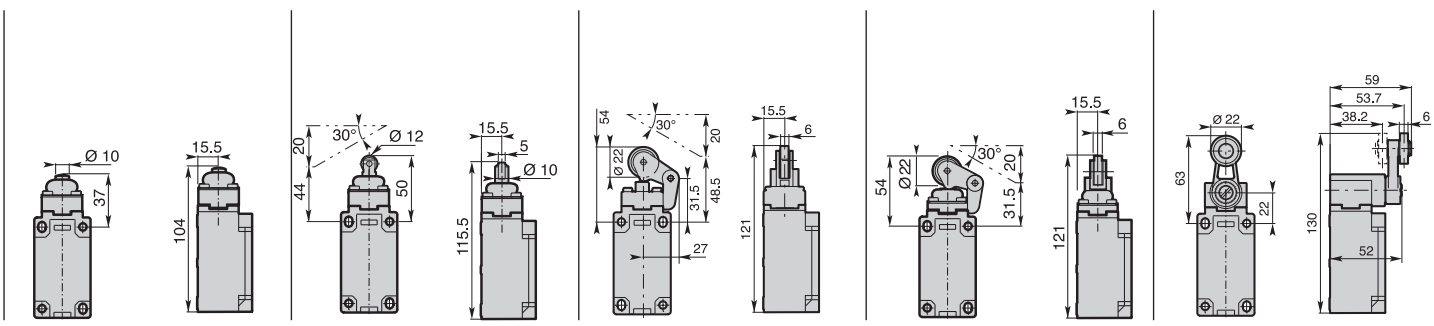
1,0
8 / 30

H4• - Ø 22 roller lever

H41: nylon roller
H42: stainless steel roller
H43: steel ball bearing

EN 50041
1,5
0,15 / 0,30

BP•H14Z11	**BP•H19Z11**	**BP•H3•Z11**	**BP•H3•Z11**	**BP•H4•Z11**
BP•H14X11	**BP•H19X11**	**BP•H3•X11**	**BP•H3•X11**	**BP•H4•X11**
BP•H14Y11	**BP•H19Y11**	**BP•H3•Y11**	**BP•H3•Y11**	**BP•H4•Y11**
BP•H14W02	**BP•H19W02**	**BP•H3•W02**	**BP•H3•W02**	**BP•H4•W02**
BP•H14W20	**BP•H19W20**	**BP•H3•W20**	**BP•H3•W20**	**BP•H4•W20**
BP•H14Z02	**BP•H19Z02**	**BP•H3•Z02**	**BP•H3•Z02**	**BP•H4•Z02**
BP•H14X12	**BP•H19X12**	**BP•H3•X12**	**BP•H3•X12**	**BP•H4•X12**
BP•H14X21	**BP•H19X21**	**BP•H3•X21**	**BP•H3•X21**	**BP•H4•X21**
BP•H14W03	**BP•H19W03**	**BP•H3•W03**	**BP•H3•W03**	**BP•H4•W03**
BP•H14W30	**BP•H19W30**	**BP•H3•W30**	**BP•H3•W30**	**BP•H4•W30**
0,145	**0,150**	**0,185**	**0,180**	**0,200**



• Travel, operation diagrams and technical data ..... pages 7, 9

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BP_H Limit Switches

Double Insulation

Plastic Casing IP65 - 40 mm. width

Electrical Connection

BP1: one cable inlet for PG 13,5 Cable Gland

BP2: one cable inlet for 1/2" NPT Cable Gland

BP5: one cable inlet for M20 x 1,5 Cable Gland

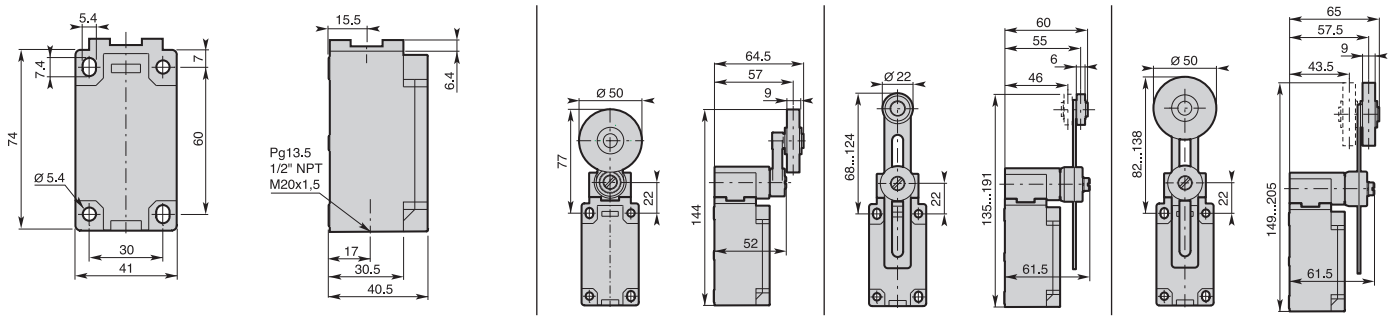
Operating Head Type

	H44 - Ø 50 rubber roller lever	H5• - Adjustable Ø 22 roller lever H51: nylon roller H52: stainless steel roller H53: steel ball bearing	H54 - Adjustable Ø 50 rubber roller lever
Conformity / ⊖ (N.C. contact with positive opening operation)	⊖	⊖	⊖
Max actuation speed [m/s]	1,5	1,5	1,5
Min. force [N] or torque [Nm]: actuation / positive opening operation	0,15 / 0,30	0,15 / 0,30	0,15 / 0,30

Additional Technical Datas

		H44 - Ø 50 rubber roller lever	H5• - Adjustable Ø 22 roller lever	H54 - Adjustable Ø 50 rubber roller lever
Z11 Snap Action Contacts (1NO + 1NC)	Order Code	BP•H44Z11	BP•H5•Z11	BP•H54Z11
	Operation Diagram	0 19° 31° 47° 90°	0 19° 31° 47° 90°	0 19° 31° 47° 90°
X11 Non overlapping Slow Action Contacts (1NO + 1NC)	Order Code	BP•H44X11	BP•H5•X11	BP•H54X11
	Operation Diagram	0 21° 37° 90° 30°	0 21° 37° 90° 30°	0 21° 37° 90° 30°
Y11 Overlapping Slow Action Contacts (1NO + 1NC)	Order Code	BP•H44Y11	BP•H5•Y11	BP•H54Y11
	Operation Diagram	0 34° 50° 90° 19°	0 34° 50° 90° 19°	0 34° 50° 90° 19°
W02 Slow Action Contacts (2NC)	Order Code	BP•H44W02	BP•H5•W02	BP•H54W02
	Operation Diagram	0 19° 35° 90°	0 19° 35° 90°	0 19° 35° 90°
W20 Slow Action Contacts (2NO) ⊗	Order Code	BP•H44W20	BP•H5•W20	BP•H54W20
	Operation Diagram	0 18° 90°	0 18° 90°	0 18° 90°
Z02 Snap Action Contacts (2NC)	Order Code	BP•H44Z02	BP•H5•Z02	BP•H54Z02
	Operation Diagram	0 19° 30° 46° 90°	0 19° 30° 46° 90°	0 19° 30° 46° 90°
X12 Non overlapping Slow Action Contacts (1NO + 2NC)	Order Code	BP•H44X12	BP•H5•X12	BP•H54X12
	Operation Diagram	0 16° 33° 90° 35°	0 16° 33° 90° 35°	0 16° 33° 90° 35°
X21 Non overlapping Slow Action Contacts (2NO + 1NC)	Order Code	BP•H44X21	BP•H5•X21	BP•H54X21
	Operation Diagram	0 17° 34° 90° 35°	0 17° 34° 90° 35°	0 17° 34° 90° 35°
W03 Simultaneous Slow Action Contacts (3NC)	Order Code	BP•H44W03	BP•H5•W03	BP•H54W03
	Operation Diagram	0 16° 33° 90°	0 16° 33° 90°	0 16° 33° 90°
W30 Simultaneous Slow Action Contacts (3NO) ⊗	Order Code	BP•H44W30	BP•H5•W30	BP•H54W30
	Operation Diagram	0 21° 90°	0 21° 90°	0 21° 90°
Weight (packing per unit)	[kg]	0,205	0,195	0,205

Dimensions (in mm)



• Travel, operation diagrams and technical data ..... pages 7, 9

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BP_H Limit Switches

Double Insulation

Plastic Casing IP65 - 40 mm. width

H61 - Nylon actuator with stainless steel spring

1,5
0,15 / –

H62 - Stainless steel spring actuator

1,5
0,15 / –

H7• - Adjustable rod lever

H71: stainless steel rod Ø3
H73: fiberglass rod Ø3
H75: square steel rod 3x3

1,5
0,15 / 0,30

H7• - Adjustable Ø 6 rod lever

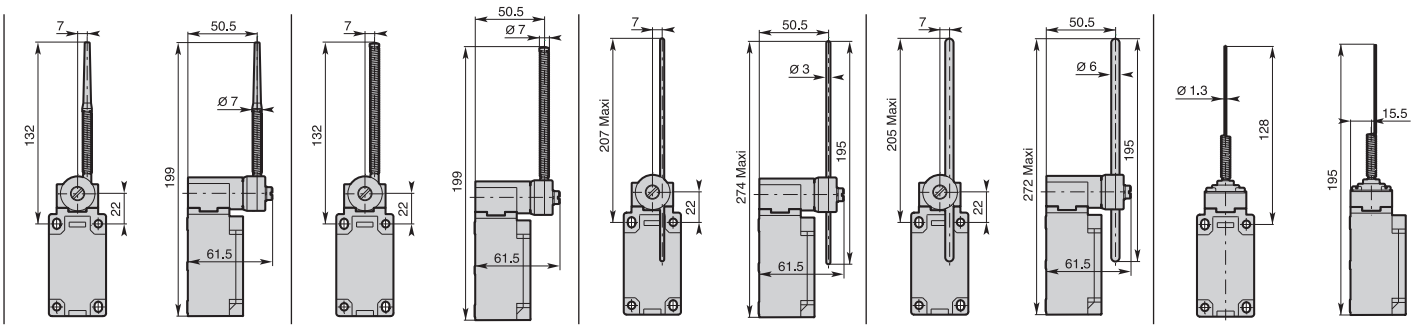
H72: nylon rod
H74: fiberglass rod

1,5
0,15 / 0,30

H91 - Stainless steel spring multidirectional actuator

1,0
0,18 / –

BP•H61Z11	**BP•H62Z11**	**BP•H7•Z11**	**BP•H7•Z11**	**BP•H91Z11**
BP•H61X11	**BP•H62X11**	**BP•H7•X11**	**BP•H7•X11**	**BP•H91X11**
BP•H61Y11	**BP•H62Y11**	**BP•H7•Y11**	**BP•H7•Y11**	**BP•H91Y11**
BP•H61W02	**BP•H62W02**	**BP•H7•W02**	**BP•H7•W02**	**BP•H91W02**
BP•H61W20	**BP•H62W20**	**BP•H7•W20**	**BP•H7•W20**	**BP•H91W20**
BP•H61Z02	**BP•H62Z02**	**BP•H7•Z02**	**BP•H7•Z02**	**BP•H91Z02**
BP•H61X12	**BP•H62X12**	**BP•H7•X12**	**BP•H7•X12**	**BP•H91X12**
BP•H61X21	**BP•H62X21**	**BP•H7•X21**	**BP•H7•X21**	**BP•H91X21**
BP•H61W03	**BP•H62W03**	**BP•H7•W03**	**BP•H7•W03**	**BP•H91W03**
BP•H61W30	**BP•H62W30**	**BP•H7•W30**	**BP•H7•W30**	**BP•H91W30**
0,190	**0,195**	**0,185**	**0,185**	**0,150**



• Travel, operation diagrams and technical data ..... pages 7, 9

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BP_H Limit Switches

Double Insulation

Plastic Casing IP65 - 40 mm. width

Electrical Connection

BP1: one cable inlet for PG 13,5 Cable Gland

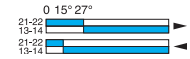
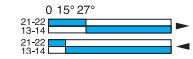
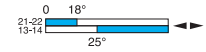
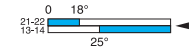
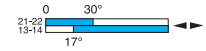
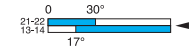
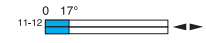
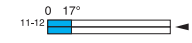
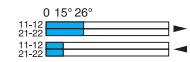
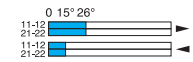
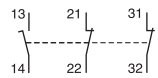
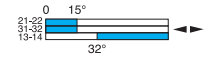
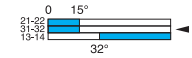
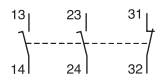
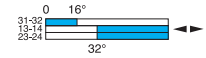
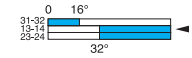
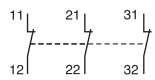
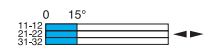
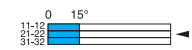
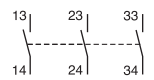
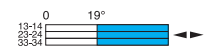
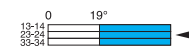
BP2: one cable inlet for 1/2" NPT Cable Gland

BP5: one cable inlet for M20 x 1,5 Cable Gland

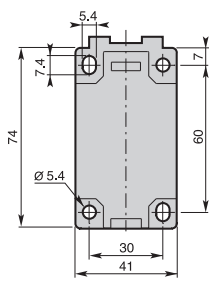
Operating Head Type

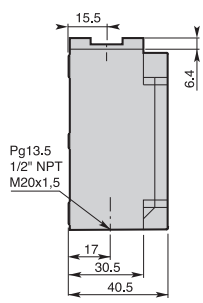
	H92 - Multidirectional nylon actuator with stainless steel spring	H93 - Stainless steel spring multidirectional actuator
Conformity / ⊖ (N.C. contact with positive opening operation)		
Max actuation speed [m/s]	1,0	1,0
Min. force [N] or torque [Nm]: actuation / positive opening operation	0,18 / –	0,18 / –

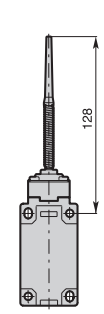
Additional Technical Datas

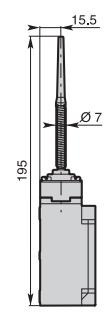
Z11 Snap Action Contacts (1NO + 1NC)		**Order Code**	**BP•H92Z11**	**BP•H93Z11**
		Operation Diagram		
X11 Non overlapping Slow Action Contacts (1NO + 1NC)		**Order Code**	**BP•H92X11**	**BP•H93X11**
		Operation Diagram		
Y11 Overlapping Slow Action Contacts (1NO + 1NC)		**Order Code**	**BP•H92Y11**	**BP•H93Y11**
		Operation Diagram		
W02 Slow Action Contacts (2NC)		**Order Code**	**BP•H92W02**	**BP•H93W02**
		Operation Diagram		
W20 Slow Action Contacts (2NO) ⊗		**Order Code**	**BP•H92W20**	**BP•H93W20**
		Operation Diagram		
Z02 Snap Action Contacts (2NC)		**Order Code**	**BP•H92Z02**	**BP•H93Z02**
		Operation Diagram		
X12 Non overlapping Slow Action Contacts (1NO + 2NC)		**Order Code**	**BP•H92X12**	**BP•H93X12**
		Operation Diagram		
X21 Non overlapping Slow Action Contacts (2NO + 1NC)		**Order Code**	**P•H92X21**	**BP•H93X21**
		Operation Diagram		
W03 Simultaneous Slow Action Contacts (3NC)		**Order Code**	**BP•H92W03**	**BP•H93W03**
		Operation Diagram		
W30 Simultaneous Slow Action Contacts (3NO) ⊗		**Order Code**	**BP•H92W30**	**BP•H93W30**
		Operation Diagram		
Weight (packing per unit)		**[kg]**	**0,155**	**0,160**

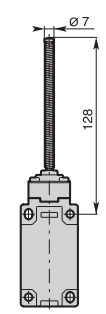
Dimensions (in mm)

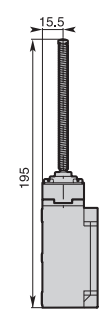












• Travel, operation diagrams and technical data ..... pages 7, 9

Utilization precautions ..... pages 14, 15

BM_P Limit Switches

Metal Casing IP66 - 40 mm. width

Electrical Connection

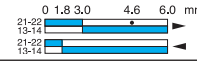
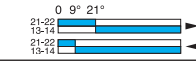
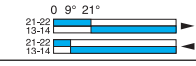
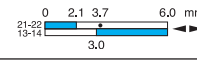
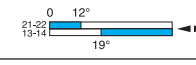
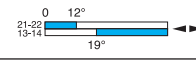
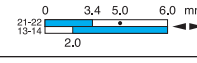
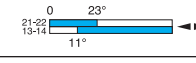
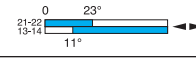
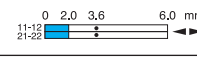
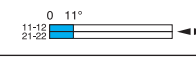
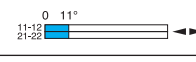
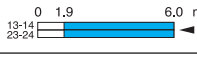
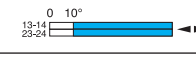
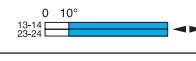
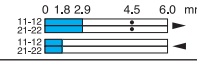
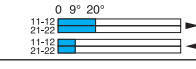
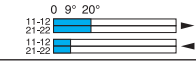
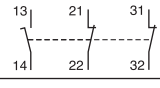
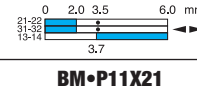
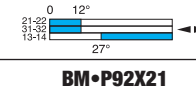
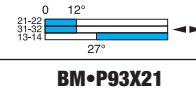
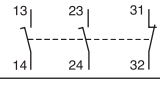
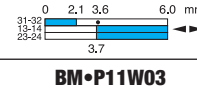
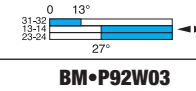
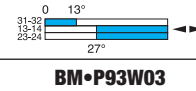
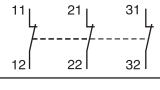
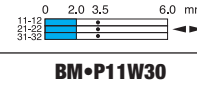
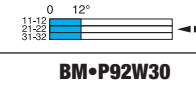
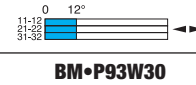
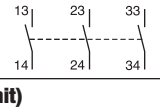
BM1: one cable inlet for PG 13,5 Cable Gland

BM2: one cable inlet for 1/2" NPT Cable Gland

BM5: one cable inlet for M20 x 1,5 Cable Gland

Operating Head Type	P11 - Plain plunger	P92 - Multidirectional nylon actuator with stainless steel spring	P93 - Stainless steel spring multidirectional actuator
Conformity / ⊖ (N.C. contact with positive opening operation)	⊖		
Max actuation speed [m/s]	0,5	1,0	1,0
Min. force [N] or torque [Nm]: actuation / positive opening operation	30 / 45	0,18 / –	0,18 / –

Additional Technical Datas

Z11 Snap Action Contacts (1NO + 1NC)		**Order Code**	**BM•P11Z11**	**BM•P92Z11**	**BM•P93Z11**
		Operation Diagram			
X11 Non overlapping Slow Action Contacts (1NO + 1NC)		**Order Code**	**BM•P11X11**	**BM•P92X11**	**BM•P93X11**
		Operation Diagram			
Y11 Overlapping Slow Action Contacts (1NO + 1NC)		**Order Code**	**BM•P11Y11**	**BM•P92Y11**	**BM•P93Y11**
		Operation Diagram			
W02 Slow Action Contacts (2NC)		**Order Code**	**BM•P11W02**	**BM•P92W02**	**BM•P93W02**
		Operation Diagram			
W20 Slow Action Contacts (2NO) ⊗		**Order Code**	**BM•P11W20**	**BM•P92W20**	**BM•P93W20**
		Operation Diagram			
Z02 Snap Action Contacts (2NC)		**Order Code**	**BM•P11Z02**	**BM•P92Z02**	**BM•P93Z02**
		Operation Diagram			
X12 Non overlapping Slow Action Contacts (1NO + 2NC)		**Order Code**	**BM•P11X12**	**BM•P92X12**	**BM•P93X12**
		Operation Diagram			
X21 Non overlapping Slow Action Contacts (2NO + 1NC)		**Order Code**	**BM•P11X21**	**BM•P92X21**	**BM•P93X21**
		Operation Diagram			
W03 Simultaneous Slow Action Contacts (3NC)		**Order Code**	**BM•P11W03**	**BM•P92W03**	**BM•P93W03**
		Operation Diagram			
W30 Simultaneous Slow Action Contacts (3NO) ⊗		**Order Code**	**BM•P11W30**	**BM•P92W30**	**BM•P93W30**
		Operation Diagram			
Weight (packing per unit)		**[kg]**	**0,220**	**0,210**	**0,215**

Dimensions (in mm)

• Travel, operation diagrams and technical data . . . . pages 7, 11

Utilization precautions . . . . . pages 14, 15

CM_P Limit Switches

Metal Casing IP66 - 60 mm. width

Electrical Connection

CM1: three cable inlets for PG 13,5 Cable Gland

CM2: three cable inlets for 1/2" NPT Cable Gland

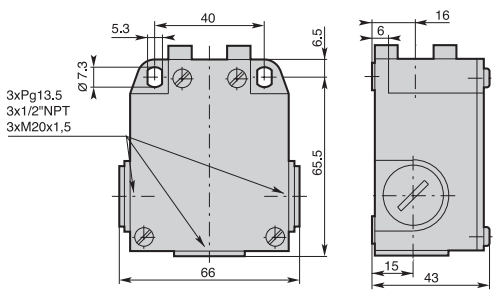
CM5: three cable inlets for M20 x 1,5 Cable Gland

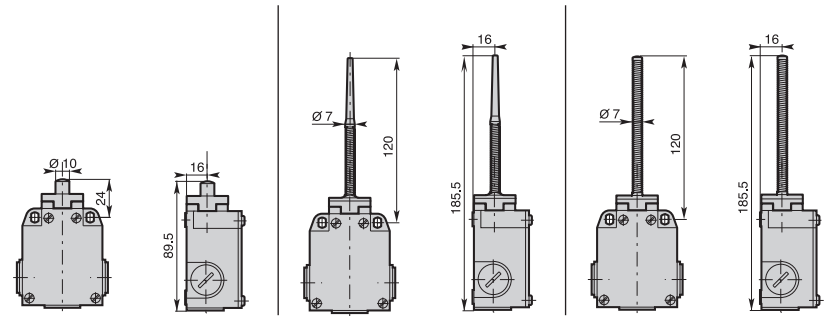
Operating Head Type	P11 - Plain plunger	P92 - Multidirectional nylon actuator with stainless steel spring	P93 - Stainless steel spring multidirectional actuator
Conformity / ⊕ (N.C. contact with positive opening operation)	⊕		
Max actuation speed [m/s]	0,5	1,0	1,0
Min. force [N] or torque [Nm]: actuation / positive opening operation	30 / 45	0,18 / –	0,18 / –

Additional Technical Datas

Z11 Snap Action Contacts (1NO + 1NC)	13 21 / 14 22	**Order Code**	**CM•P11Z11**	**CM•P92Z11**	**CM•P93Z11**
		Operation Diagram	0 1.8 3.0 4.6 6.0 mm	0 9° 21°	0 9° 21°
X11 Non overlapping Slow Action Contacts (1NO + 1NC)	13 21 / 14 22	**Order Code**	**CM•P11X11**	**CM•P92X11**	**CM•P93X11**
		Operation Diagram	0 2.1 3.7 6.0 mm (3.0)	0 12° (19°)	0 12° (19°)
Y11 Overlapping Slow Action Contacts (1NO + 1NC)	13 21 / 14 22	**Order Code**	**CM•P11Y11**	**CM•P92Y11**	**CM•P93Y11**
		Operation Diagram	0 3.4 5.0 6.0 mm (2.0)	0 23° (11°)	0 23° (11°)
W02 Slow Action Contacts (2NC)	11 21 / 12 22	**Order Code**	**CM•P11W02**	**CM•P92W02**	**CM•P93W02**
		Operation Diagram	0 2.0 3.6 6.0 mm	0 11°	0 11°
W20 Slow Action Contacts (2NO) ⊗	13 23 / 14 24	**Order Code**	**CM•P11W20**	**CM•P92W20**	**CM•P93W20**
		Operation Diagram	0 1.9 6.0 mm	0 10°	0 10°
Z02 Snap Action Contacts (2NC)	11 21 / 12 22	**Order Code**	**CM•P11Z02**	**CM•P92Z02**	**CM•P93Z02**
		Operation Diagram	0 1.8 2.9 4.5 6.0 mm	0 9° 20°	0 9° 20°
X12 Non overlapping Slow Action Contacts (1NO + 2NC)	13 21 31 / 14 22 32	**Order Code**	**CM•P11X12**	**CM•P92X12**	**CM•P93X12**
		Operation Diagram	0 2.0 3.5 6.0 mm (3.7)	0 12° (27°)	0 12° (27°)
X21 Non overlapping Slow Action Contacts (2NO + 1NC)	13 23 31 / 14 24 32	**Order Code**	**CM•P11X21**	**CM•P92X21**	**CM•P93X21**
		Operation Diagram	0 2.1 3.6 6.0 mm (3.7)	0 13° (27°)	0 13° (27°)
W03 Simultaneous Slow Action Contacts (3NC)	11 21 31 / 12 22 32	**Order Code**	**CM•P11W03**	**CM•P92W03**	**CM•P93W03**
		Operation Diagram	0 2.0 3.5 6.0 mm	0 12°	0 12°
W30 Simultaneous Slow Action Contacts (3NO) ⊗	13 23 33 / 14 24 34	**Order Code**	**CM•P11W30**	**CM•P92W30**	**CM•P93W30**
		Operation Diagram	0 2,3 6.0 mm	0 16°	0 16°
Weight (packing per unit)		**[kg]**	**0,245**	**0,245**	**0,250**

Dimensions (in mm)





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BM_E Limit Switches

Metal Casing IP66 - 40 mm. width

Electrical Connection

BM1: one cable inlet for PG 13,5 Cable Gland

BM2: one cable inlet for 1/2" NPT Cable Gland

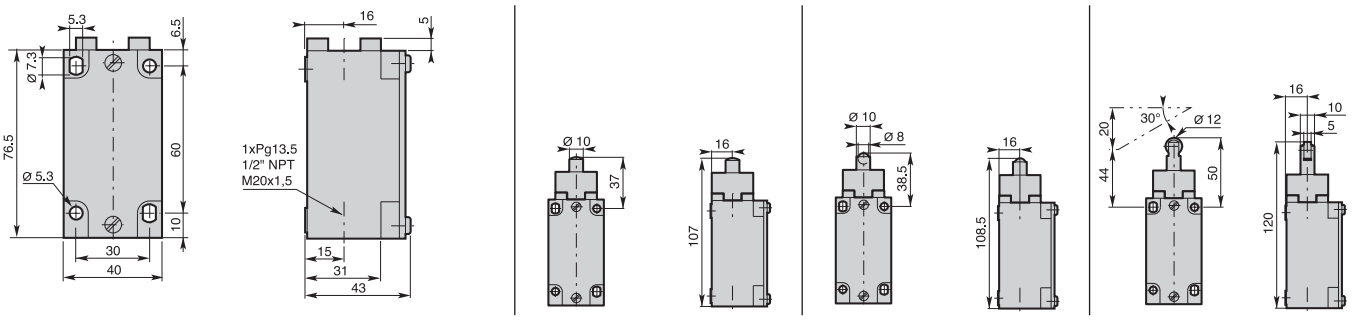
BM5: one cable inlet for M20 x 1,5 Cable Gland

Operating Head Type	E11 - Stainless steel plain plunger	E12 - Stainless steel ball plunger	E13 - Stainless steel Ø 12 roller plunger
Conformity / ⊕ (N.C. contact with positive opening operation)	EN 50041 ⊕	EN 50041 ⊕	EN 50041 ⊕
Max actuation speed [m/s]	0,5	0,5	0,5
Min. force [N] or torque [Nm]: actuation / positive opening operation	30 / 45	30 / 45	22 / 40

Additional Technical Datas

Z11 Snap Action Contacts (1NO + 1NC)	13 21 / 14 22	**Order Code**	**BM•E11Z11**	**BM•E12Z11**	**BM•E13Z11**
		Operation Diagram	0 1.8 3.0 4.6 6.0 mm	0 1.8 3.0 4.6 6.0 mm	0 3.1 5.3 8.2 10.5 mm
X11 Non overlapping Slow Action Contacts (1NO + 1NC)	13 21 / 14 22	**Order Code**	**BM•E11X11**	**BM•E12X11**	**BM•E13X11**
		Operation Diagram	0 2.1 3.7 6.0 mm, 3.0	0 2.1 3.7 6.0 mm, 3.0	0 4.0 6.9 10.5 mm, 5.4
Y11 Overlapping Slow Action Contacts (1NO + 1NC)	13 21 / 14 22	**Order Code**	**BM•E11Y11**	**BM•E12Y11**	**BM•E13Y11**
		Operation Diagram	0 3.4 5.0 6.0 mm, 2.0	0 3.4 5.0 6.0 mm, 2.0	0 6.0 8.9 10.5 mm, 3.7
W02 Slow Action Contacts (2NC)	11 21 / 12 22	**Order Code**	**BM•E11W02**	**BM•E12W02**	**BM•E13W02**
		Operation Diagram	0 2.0 3.6 6.0 mm	0 2.0 3.6 6.0 mm	0 3.7 6.6 10.5 mm
W20 Slow Action Contacts (2NO) ⊗	13 23 / 14 24	**Order Code**	**BM•E11W20**	**BM•E12W20**	**BM•E13W20**
		Operation Diagram	0 1.9 6.0 mm	0 1.9 6.0 mm	0 3.5 10.5 mm
Z02 Snap Action Contacts (2NC)	11 21 / 12 22	**Order Code**	**BM•E11Z02**	**BM•E12Z02**	**BM•E13Z02**
		Operation Diagram	0 1.8 2.9 4.5 6.0 mm	0 1.8 2.9 4.5 6.0 mm	0 3.1 5.1 8.0 10.5 mm
X12 Non overlapping Slow Action Contacts (1NO + 2NC)	13 21 31 / 14 22 32	**Order Code**	**BM•E11X12**	**BM•E12X12**	**BM•E13X12**
		Operation Diagram	0 2.0 3.5 6.0 mm, 3.7	0 2.0 3.5 6.0 mm, 3.7	0 3.8 6.3 10.5 mm, 6.5
X21 Non overlapping Slow Action Contacts (2NO + 1NC)	13 23 31 / 14 24 32	**Order Code**	**BM•E11X21**	**BM•E12X21**	**BM•E13X21**
		Operation Diagram	0 2.1 3.6 6.0 mm, 3.7	0 2.1 3.6 6.0 mm, 3.7	0 3.9 6.4 10.5 mm, 6.5
W03 Simultaneous Slow Action Contacts (3NC)	11 21 31 / 12 22 32	**Order Code**	**BM•E11W03**	**BM•E12W03**	**BM•E13W03**
		Operation Diagram	0 2.0 3.5 6.0 mm	0 2.0 3.5 6.0 mm	0 3.8 6.3 10.5 mm
W30 Simultaneous Slow Action Contacts (3NO) ⊗	13 23 33 / 14 24 34	**Order Code**	**BM•E11W30**	**BM•E12W30**	**BM•E13W30**
		Operation Diagram	0 2.3 6.0 mm	0 2.3 6.0 mm	0 4.3 10.5 mm
Weight (packing per unit)		**[kg]**	**0,240**	**0,240**	**0,245**

Dimensions (in mm)



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BM_E Limit Switches

Metal Casing IP66 - 40 mm. width

Electrical Connection

BM1: one cable inlet for PG 13,5 Cable Gland

BM2: one cable inlet for 1/2" NPT Cable Gland

BM5: one cable inlet for M20 x 1,5 Cable Gland

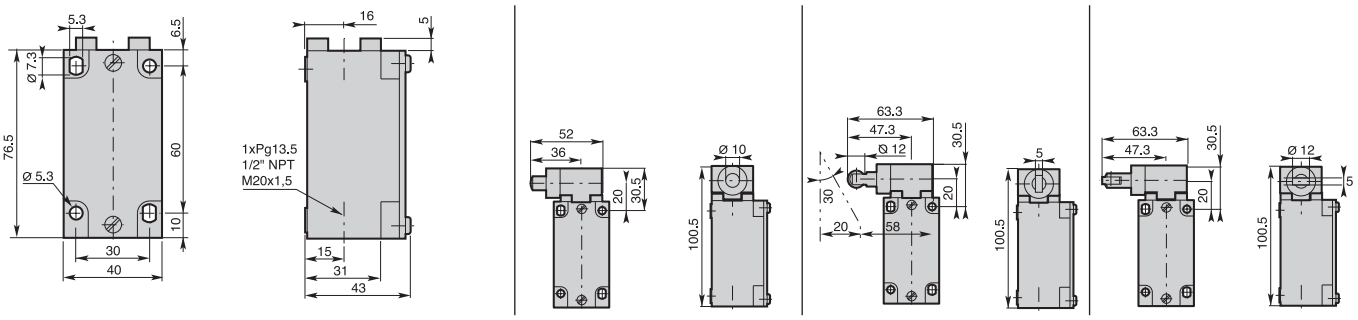
Operating Head Type

	E21 - Stainless steel lateral plain plunger	E22 - Stainless steel lateral plunger with Ø 12 vertical roller	E23 - Stainless steel lateral plunger with Ø 12 horizontal roller
Conformity / ⊕ (N.C. contact with positive opening operation)	EN 50041 ⊕	EN 50041 ⊕	EN 50041 ⊕
Max actuation speed [m/s]	0,5	0,5	0,5
Min. force [N] or torque [Nm]: actuation / positive opening operation	30 / 50	30 / 50	30 / 50

Additional Technical Datas

		E21	E22	E23
Z11 Snap Action Contacts (1NO + 1NC)	Order Code	**BM•E21Z11**	**BM•E22Z11**	**BM•E23Z11**
	Operation Diagram	0 2.0 3.2 4.8 6.0 mm	0 3.7 5.9 8.8 10.2 mm	0 3.7 5.9 8.8 10.2 mm
X11 Non overlapping Slow Action Contacts (1NO + 1NC)	Order Code	**BM•E21X11**	**BM•E22X11**	**BM•E23X11**
	Operation Diagram	0 2.3 3.9 6.0 mm, 3.2	0 4.6 7.5 10.2 mm, 6.0	0 4.6 7.5 10.2 mm, 6.0
Y11 Overlapping Slow Action Contacts (1NO + 1NC)	Order Code	**BM•E21Y11**	**BM•E22Y11**	**BM•E23Y11**
	Operation Diagram	0 3.6 5.2 6.0 mm, 2.2	0 6.6 9.5 10.2 mm, 4.3	0 6.6 9.5 10.2 mm, 4.3
W02 Slow Action Contacts (2NC)	Order Code	**BM•E21W02**	**BM•E22W02**	**BM•E23W02**
	Operation Diagram	0 2.2 3.8 6.0 mm	0 4.3 7.2 10.2 mm	0 4.3 7.2 10.2 mm
W20 Slow Action Contacts (2NO) ⊗	Order Code	**BM•E21W20**	**BM•E22W20**	**BM•E23W20**
	Operation Diagram	0 2.1 6.0 mm	0 4.1 10.2 mm	0 4.1 10.2 mm
Z02 Snap Action Contacts (2NC)	Order Code	**BM•E21Z02**	**BM•E22Z02**	**BM•E23Z02**
	Operation Diagram	0 2.0 3.1 4.7 6.0 mm	0 3.7 5.7 8.6 10.2 mm	0 3.7 5.7 8.6 10.2 mm
X12 Non overlapping Slow Action Contacts (1NO + 2NC)	Order Code	**BM•E21X12**	**BM•E22X12**	**BM•E23X12**
	Operation Diagram	0 1.4 2.9 6.0 mm, 3.1	0 3.5 6.1 10.2 mm, 6.2	0 3.5 6.1 10.2 mm, 6.2
X21 Non overlapping Slow Action Contacts (2NO + 1NC)	Order Code	**BM•E21X21**	**BM•E22X21**	**BM•E23X21**
	Operation Diagram	0 1.5 3.0 6.0 mm, 3.1	0 3.6 6.2 10.2 mm, 6.2	0 3.6 6.2 10.2 mm, 6.2
W03 Simultaneous Slow Action Contacts (3NC)	Order Code	**BM•E21W03**	**BM•E22W03**	**BM•E23W03**
	Operation Diagram	0 1.4 2.9 6.0 mm	0 3.5 6.1 10.2 mm	0 3.5 6.1 10.2 mm
W30 Simultaneous Slow Action Contacts (3NO) ⊗	Order Code	**BM•E21W30**	**BM•E22W30**	**BM•E23W30**
	Operation Diagram	0 1.9 6.0 mm	0 4.0 10.2 mm	0 4.0 10.2 mm
Weight (packing per unit)	**[kg]**	**0,260**	**0,265**	**0,265**

Dimensions (in mm)



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BM_E Limit Switches

Metal Casing IP66 - 40 mm. width

E3• - One way lever

E31: Ø22 nylon roller
E32: Ø22 stainless steel roller
E33: Ø22 steel ball bearing

1,5
12 / 40

E4• - Ø 22 roller lever

E41: nylon roller
E42: stainless steel roller
E43: steel ball bearing

EN 50041
1,5
0,15 / 0,30

E44 - Ø 50 rubber roller lever

1,5
0,15 / 0,30

E5• - Adjustable Ø 22 roller lever

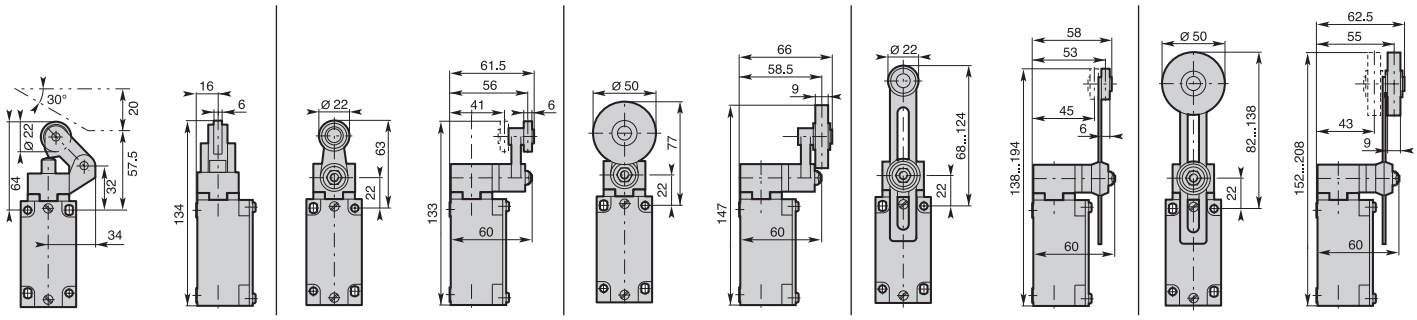
E51: nylon roller
E52: stainless steel roller
E53: steel ball bearing

1,5
0,15 / 0,30

E54 - Adjustable Ø 50 rubber roller lever

1,5
0,15 / 0,30

BM•E3•Z11	**BM•E4•Z11**	**BM•E44Z11**	**BM•E5•Z11**	**BM•E54Z11**
BM•E3•X11	**BM•E4•X11**	**BM•E44X11**	**BM•E5•X11**	**BM•E54X11**
BM•E3•Y11	**BM•E4•Y11**	**BM•E44Y11**	**BM•E5•Y11**	**BM•E54Y11**
BM•E3•W02	**BM•E4•W02**	**BM•E44W02**	**BM•E5•W02**	**BM•E54W02**
BM•E3•W20	**BM•E4•W20**	**BM•E44W20**	**BM•E5•W20**	**BM•E54W20**
BM•E3•Z02	**BM•E4•Z02**	**BM•E44Z02**	**BM•E5•Z02**	**BM•E54Z02**
BM•E3•X12	**BM•E4•X12**	**BM•E44X12**	**BM•E5•X12**	**BM•E54X12**
BM•E3•X21	**BM•E4•X21**	**BM•E44X21**	**BM•E5•X21**	**BM•E54X21**
BM•E3•W03	**BM•E4•W03**	**BM•E44W03**	**BM•E5•W03**	**BM•E54W03**
BM•E3•W30	**BM•E4•W30**	**BM•E44W30**	**BM•E5•W30**	**BM•E54W30**
0,280	**0,300**	**0,315**	**0,320**	**0,325**



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BM_E Limit Switches

Metal Casing IP66 - 40 mm. width

Electrical Connection

BM1: one cable inlet for PG 13,5 Cable Gland

BM2: one cable inlet for 1/2" NPT Cable Gland

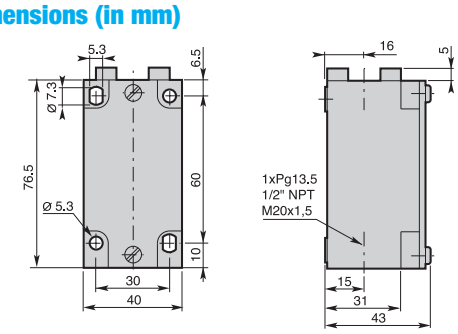
BM5: one cable inlet for M20 x 1,5 Cable Gland

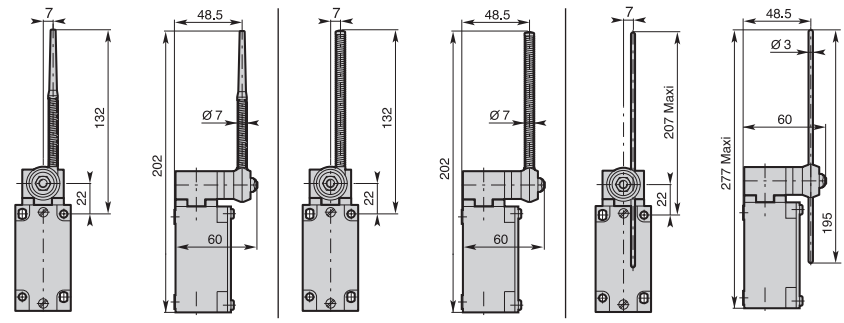
Operating Head Type	E61 - Nylon actuator with stainless steel spring	E62 - Stainless steel spring actuator	E7• - Adjustable rod lever E71: stainless steel rod Ø3 E73: fiberglass rod Ø3 E75: square steel rod 3x3
Conformity / ⊖ (N.C. contact with positive opening operation)			EN50041 ⊖
Max actuation speed [m/s]	1,5	1,5	1,5
Min. force [N] or torque [Nm]: actuation / positive opening operation	0,15 / –	0,15 / –	0,15 / 0,30

Additional Technical Datas

Z11 Snap Action Contacts (1NO + 1NC)	**Order Code**	**BM•E61Z11**	**BM•E62Z11**	**BM•E7•Z11**
	Operation Diagram	0 20° 33° 78°	0 20° 33° 78°	0 20° 33° 49° 78°
X11 Non overlapping Slow Action Contacts (1NO + 1NC)	**Order Code**	**BM•E61X11**	**BM•E62X11**	**BM•E7•X11**
	Operation Diagram	0 22° 78° 33°	0 22° 78° 33°	0 22° 38° 78° 33°
Y11 Overlapping Slow Action Contacts (1NO + 1NC)	**Order Code**	**BM•E61Y11**	**BM•E62Y11**	**BM•E7•Y11**
	Operation Diagram	0 37° 78° 21°	0 37° 78° 21°	0 37° 53° 78° 21°
W02 Slow Action Contacts (2NC)	**Order Code**	**BM•E61W02**	**BM•E62W02**	**BM•E7•W02**
	Operation Diagram	0 21° 78°	0 21° 78°	0 21° 37° 78°
W20 Slow Action Contacts (2NO) ⊗	**Order Code**	**BM•E61W20**	**BM•E62W20**	**BM•E7•W20**
	Operation Diagram	0 20° 78°	0 20° 78°	0 20° 78°
Z02 Snap Action Contacts (2NC)	**Order Code**	**BM•E61Z02**	**BM•E62Z02**	**BM•E7•Z02**
	Operation Diagram	0 20° 32° 78°	0 20° 32° 78°	0 20° 32° 48° 78°
X12 Non overlapping Slow Action Contacts (1NO + 2NC)	**Order Code**	**BM•E61X12**	**BM•E62X12**	**BM•E7•X12**
	Operation Diagram	0 18° 78° 37°	0 18° 78° 37°	0 18° 35° 78° 37°
X21 Non overlapping Slow Action Contacts (2NO + 1NC)	**Order Code**	**BM•E61X21**	**BM•E62X21**	**BM•E7•X21**
	Operation Diagram	0 19° 78° 37°	0 19° 78° 37°	0 19° 36° 78° 37°
W03 Simultaneous Slow Action Contacts (3NC)	**Order Code**	**BM•E61W03**	**BM•E62W03**	**BM.E7•W03**
	Operation Diagram	0 18° 78°	0 18° 78°	0 18° 35° 78°
W30 Simultaneous Slow Action Contacts (3NO) ⊗	**Order Code**	**BM•E61W30**	**BM•E62W30**	**BM•E7•W30**
	Operation Diagram	0 23° 78°	0 23° 78°	0 23° 78°
Weight (packing per unit)	**[kg]**	**0,305**	**0,310**	**0,305**

Dimensions (in mm)





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BM_E Limit Switches

Metal Casing IP66 - 40 mm. width

E7• - Adjustable rod lever
E72: nylon rod
E74: fiberglass rod

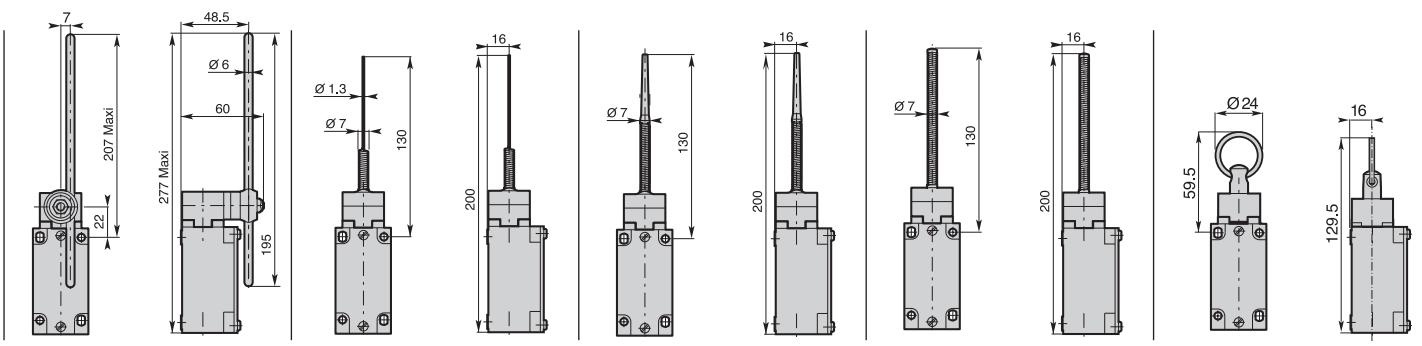
E91 - Stainless steel spring multidirectional actuator

E92 - Multidirectional nylon actuator with stainless steel spring

E93 - Stainless steel spring multidirectional actuator

E99 - Pull action with ring

EN 50041 ⊕ 1,5 0,15 / 0,30	1,0 0,18 / –	1,0 0,18 / –	1,0 0,18 / –	0,5 25 / –
BM•E7•Z11	**BM•E91Z11**	**BM•E92Z11**	**BM•E93Z11**	**BM•E99Z11A**
BM•E7•X11	**BM•E91X11**	**BM•E92X11**	**BM•E93X11**	**BM•E99X11A**
BM•E7•Y11	**BM•E91Y11**	**BM•E92Y11**	**BM•E93Y11**	**BM•E99Y11A**
BM•E7•W02	**BM•E91W02**	**BM•E92W02**	**BM•E93W02**	**BM•E99W02A**
BM•E7•W20	**BM•E91W20**	**BM•E92W20**	**BM•E93W20**	**BM•E99W20A**
BM•E7•Z02	**BM•E91Z02**	**BM•E92Z02**	**BM•E93Z02**	
BM•E7•X12	**BM•E91X12**	**BM•E92X12**	**BM•E93X12**	**BM•E99X12A**
BM•E7•X21	**BM•E91X21**	**BM•E92X21**	**BM•E93X21**	**BM•E99X21A**
BM•E7•W03	**BM•E91W03**	**BM•E92W03**	**BM•E93W03**	**BM•E99W03A**
BM•E7•W30	**BM•E91W30**	**BM•E92W30**	**BM•E93W30**	**BM•E99W30A**
0,300	**0,230**	**0,230**	**0,235**	**0,245**



• Travel, operation diagrams and technical data . . . . pages 7, 11

Utilization precautions . . . . . pages 14, 15

CM_E Limit Switches

Metal Casing IP66 - 60 mm. width

Electrical Connection

CM1: three cable inlets for PG 13,5 Cable Gland

CM2: three cable inlets for 1/2" NPT Cable Gland

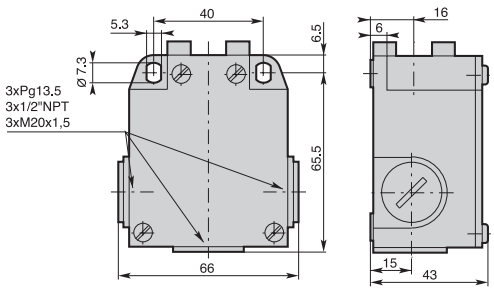
CM5: three cable inlets for M20 x 1,5 Cable Gland

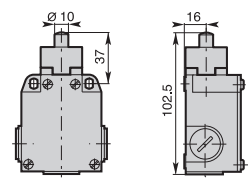
Operating Head Type	E11 - Stainless steel plain plunger	E12 - Stainless steel ball plunger	E13 - Stainless steel Ø 12 roller plunger
Conformity / ⊖ (N.C. contact with positive opening operation)	⊖	⊖	⊖
Max actuation speed [m/s]	0,5	0,5	0,5
Min. force [N] or torque [Nm]: actuation / positive opening operation	30 / 45	30 / 45	22 / 40

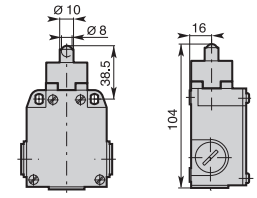
Additional Technical Datas

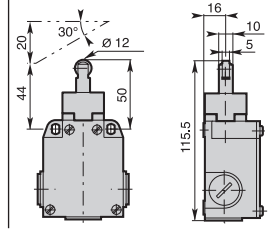
		E11	E12	E13
Z11 Snap Action Contacts (1NO + 1NC)	Order Code	CM•E11Z11	CM•E12Z11	CM•E13Z11
	Operation Diagram	0 1.8 3.0 4.6 6.0 mm	0 1.8 3.0 4.6 6.0 mm	0 3.1 5.3 8.2 10.5 mm
X11 Non overlapping Slow Action Contacts (1NO + 1NC)	Order Code	CM•E11X11	CM•E12X11	CM•E13X11
	Operation Diagram	0 2.1 3.7 6.0 mm, 3.0	0 2.1 3.7 6.0 mm, 3.0	0 4.0 6.9 10.5 mm, 5.4
Y11 Overlapping Slow Action Contacts (1NO + 1NC)	Order Code	CM•E11Y11	CM•E12Y11	CM•E13Y11
	Operation Diagram	0 3.4 5.0 6.0 mm, 2.0	0 3.4 5.0 6.0 mm, 2.0	0 6.0 8.9 10.5 mm, 3.7
W02 Slow Action Contacts (2NC)	Order Code	CM•E11W02	CM•E12W02	CM•E13W02
	Operation Diagram	0 2.0 3.6 6.0 mm	0 2.0 3.6 6.0 mm	0 3.7 6.6 10.5 mm
W20 Slow Action Contacts (2NO) ⊗	Order Code	CM•E11W20	CM•E12W20	CM•E13W20
	Operation Diagram	0 1.9 6.0 mm	0 1.9 6.0 mm	0 3.5 10.5 mm
Z02 Snap Action Contacts (2NC)	Order Code	CM•E11Z02	CM•E12Z02	CM•E13Z02
	Operation Diagram	0 1.8 2.9 4.5 6.0 mm	0 1.8 2.9 4.5 6.0 mm	0 3.1 5.1 8.0 10.5 mm
X12 Non overlapping Slow Action Contacts (1NO + 2NC)	Order Code	CM•E11X12	CM•E12X12	CM•E13X12
	Operation Diagram	0 2.0 3.5 6.0 mm, 3.7	0 2.0 3.5 6.0 mm, 3.7	0 3.8 6.3 10.5 mm, 6.5
X21 Non overlapping Slow Action Contacts (2NO + 1NC)	Order Code	CM•E11X21	CM•E12X21	CM•E13X21
	Operation Diagram	0 2.1 3.6 6.0 mm, 3.7	0 2.1 3.6 6.0 mm, 3.7	0 3.9 6.4 10.5 mm, 6.5
W03 Simultaneous Slow Action Contacts (3NC)	Order Code	CM•E11W03	CM•E12W03	CM•E13W03
	Operation Diagram	0 2.0 3.5 6.0 mm	0 2.0 3.5 6.0 mm	0 3.8 6.3 10.5 mm
W30 Simultaneous Slow Action Contacts (3NO) ⊗	Order Code	CM•E11W30	CM•E12W30	CM•E13W30
	Operation Diagram	0 2.3 6.0 mm	0 2.3 6.0 mm	0 4.3 10.5 mm
Weight (packing per unit)	[kg]	0,265	0,265	0,270

Dimensions (in mm)









• Travel, operation diagrams and technical data . . . . pages 7, 11

Utilization precautions . . . . . pages 14, 15

CM_E Limit Switches

Metal Casing IP66 - 60 mm. width

E21 - Stainless steel lateral plain plunger

E22 - Stainless steel lateral plunger with Ø 12 vertical roller

E23 - Stainless steel lateral plunger with Ø 12 horizontal roller

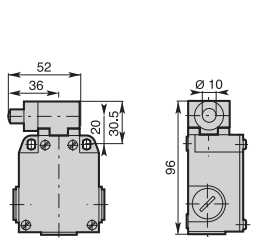
E3• - One way lever

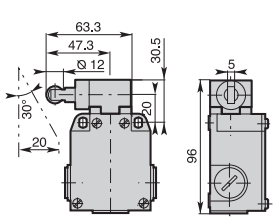
E31: Ø22 nylon roller
E32: Ø22 stainless steel roller
E33: Ø22 steel ball bearing

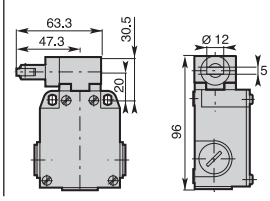
E4• - Ø 22 roller lever

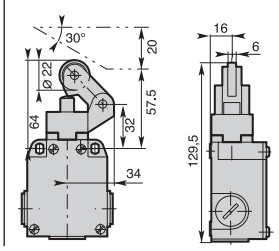
E41: nylon roller
E42: stainless steel roller
E43: steel ball bearing

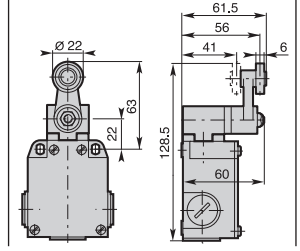
0,5 30 / 50	0,5 30 / 50	0,5 30 / 50	1,5 12 / 30	1,5 0,15 / 0,30
CM•E21Z11	**CM•E22Z11**	**CM•E23Z11**	**CM•E3•Z11**	**CM•E4•Z11**
CM•E21X11	**CM•E22X11**	**CM•E23X11**	**CM•E3•X11**	**CM•E4•X11**
CM•E21Y11	**CM•E22Y11**	**CM•E23Y11**	**CM•E3•Y11**	**CM•E4•Y11**
CM•E21W02	**CM•E22W02**	**CM•E23W02**	**CM•E3•W02**	**CM•E4•W02**
CM•E21W20	**CM•E22W20**	**CM•E23W20**	**CM•E3•W20**	**CM•E4•W20**
CM•E21Z02	**CM•E22Z02**	**CM•E23Z02**	**CM•E3•Z02**	**CM•E4•Z02**
CM•E21X12	**CM•E22X12**	**CM•E23X12**	**CM•E3•X12**	**CM•E4•X12**
CM•E21X21	**CM•E22X21**	**CM•E23X21**	**CM•E3•X21**	**CM•E4•X21**
CM•E21W03	**CM•E22W03**	**CM•E23W03**	**CM•E3•W03**	**CM•E4•W03**
CM•E21W30	**CM•E22W30**	**CM•E23W30**	**CM•E3•W30**	**CM•E4•W30**
0,285	**0,290**	**0,290**	**0,305**	**0,305**











• Travel, operation diagrams and technical data .... pages 7, 11

Utilization precautions ..... pages 14, 15

CM_E Limit Switches

Metal Casing IP66 - 60 mm. width

Electrical Connection

CM1: three cable inlets for PG 13,5 Cable Gland

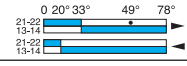
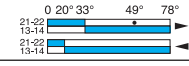
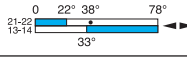
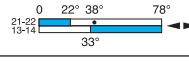
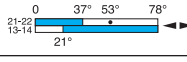
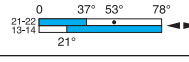
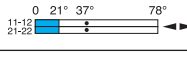
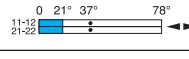
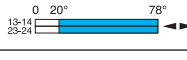
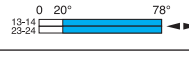
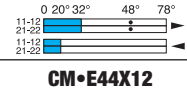
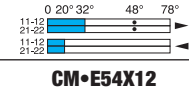
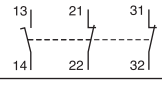
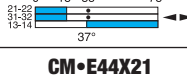
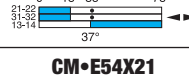
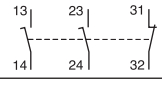
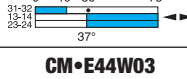
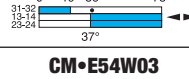
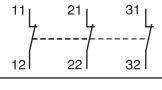
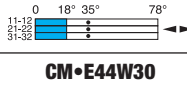
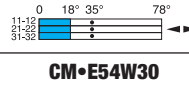
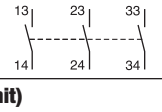
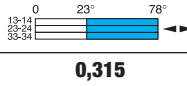
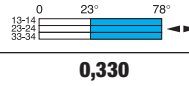
CM2: three cable inlets for 1/2" NPT Cable Gland

CM5: three cable inlets for M20 x 1,5 Cable Gland

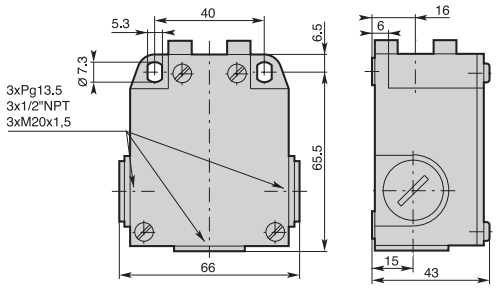
Operating Head Type

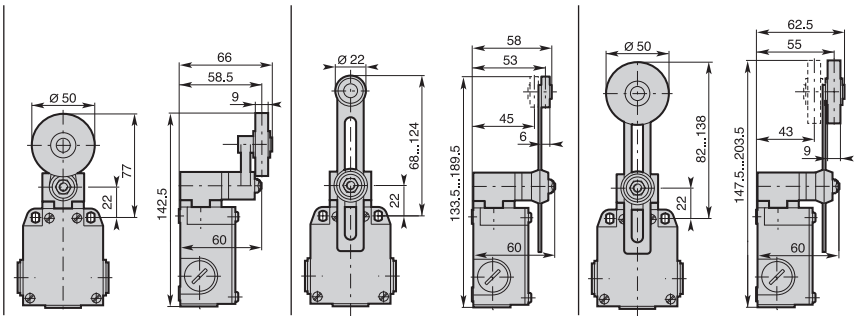
	E44 - Ø 50 rubber roller lever	E5• - Adjustable Ø 22 roller lever E51: nylon roller E52: stainless steel roller E53: steel ball bearing	E54 - Adjustable Ø 50 rubber roller lever
Conformity / ⊖ (N.C. contact with positive opening operation)	⊖	⊖	⊖
Max actuation speed [m/s]	1,5	1,5	1,5
Min. force [N] or torque [Nm]: actuation / positive opening operation	0,15 / 0,30	0,15 / 0,30	0,15 / 0,30

Additional Technical Datas

Z11 Snap Action Contacts (1NO + 1NC)		**Order Code**	**CM•E44Z11**	**CM•E54Z11**
		Operation Diagram		
X11 Non overlapping Slow Action Contacts (1NO + 1NC)		**Order Code**	**CM•E44X11**	**CM•E54X11**
		Operation Diagram		
Y11 Overlapping Slow Action Contacts (1NO + 1NC)		**Order Code**	**CM•E44Y11**	**CM•E54Y11**
		Operation Diagram		
W02 Slow Action Contacts (2NC)		**Order Code**	**CM•E44W02**	**CM•E54W02**
		Operation Diagram		
W20 Slow Action Contacts (2NO) ⊗		**Order Code**	**CM•E44W20**	**CM•E54W20**
		Operation Diagram		
Z02 Snap Action Contacts (2NC)		**Order Code**	**CM•E44Z02**	**CM•E54Z02**
		Operation Diagram		
X12 Non overlapping Slow Action Contacts (1NO + 2NC)		**Order Code**	**CM•E44X12**	**CM•E54X12**
		Operation Diagram		
X21 Non overlapping Slow Action Contacts (2NO + 1NC)		**Order Code**	**CM•E44X21**	**CM•E54X21**
		Operation Diagram		
W03 Simultaneous Slow Action Contacts (3NC)		**Order Code**	**CM•E44W03**	**CM•E54W03**
		Operation Diagram		
W30 Simultaneous Slow Action Contacts (3NO) ⊗		**Order Code**	**CM•E44W30**	**CM•E54W30**
		Operation Diagram		
Weight (packing per unit)		**[kg]**	**0,315**	**0,325**	**0,330**

Dimensions (in mm)





• Travel, operation diagrams and technical data .... pages 7, 11

Utilization precautions ..... pages 14, 15

CM_E Limit Switches

Metal Casing IP66 - 60 mm. width

E61 - Nylon actuator with stainless steel spring

1,5
0,15 / –

E62 - Stainless steel spring actuator

1,5
0,15 / –

E7• - Adjustable rod lever

E71: stainless steel rod Ø3
E73: fiberglass rod Ø3
E75: square steel rod 3x3

1,5
0,15 / 0,30

E7• - Adjustable Ø 6 rod lever

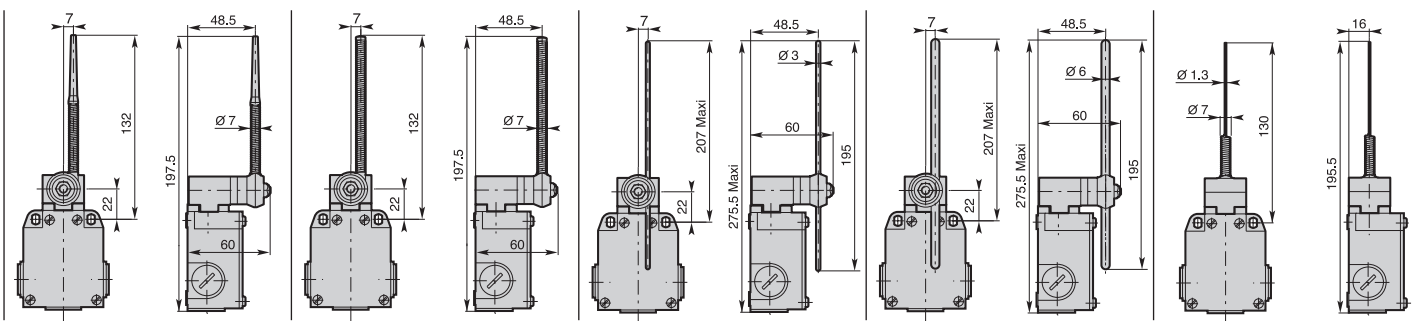
F72: nylon rod
F74: fiberglass rod

1,5
0,15 / 0,30

E91 - Stainless steel spring multidirectional actuator

1,0
0,18 / –

CM•E61Z11	**CM•E62Z11**	**CM•E7•Z11**	**CM•E7•Z11**	**CM•E91Z11**
CM•E61X11	**CM•E62X11**	**CM•E7•X11**	**CM•E7•X11**	**CM•E91X11**
CM•E61Y11	**CM•E62Y11**	**CM•E7•Y11**	**CM•E7•Y11**	**CM•E91Y11**
CM•E61W02	**CM•E62W02**	**CM•E7•W02**	**CM•E7•W02**	**CM•E91W02**
CM•E61W20	**CM•E62W20**	**CM•E7•W20**	**CM•E7•W20**	**CM•E91W20**
CM•E61Z02	**CM•E62Z02**	**CM•E7•Z02**	**CM•E7•Z02**	**CM•E91Z02**
CM•E61X12	**CM•E62X12**	**CM•E7•X12**	**CM•E7•X12**	**CM•E91X12**
CM•E61X21	**CM•E62X21**	**CM•E7•X21**	**CM•E7•X21**	**CM•E91X21**
CM•E61W03	**CM•E62W03**	**CM•E7•W03**	**CM•E7•W03**	**CM•E91W03**
CM•E61W30	**CM•E62W30**	**CM•E7•W30**	**CM•E7•W30**	**CM•E91W30**
0,330	**0,330**	**0,330**	**0,330**	**0,265**



• Travel, operation diagrams and technical data . . . . pages 7, 11

Utilization precautions . . . . . pages 14, 15

CM_E Limit Switches

Metal Casing IP66 - 60 mm. width

Electrical Connection

CM1: three cable inlets for PG 13,5 Cable Gland

CM2: three cable inlets for 1/2" NPT Cable Gland

CM5: three cable inlets for M20 x 1,5 Cable Gland

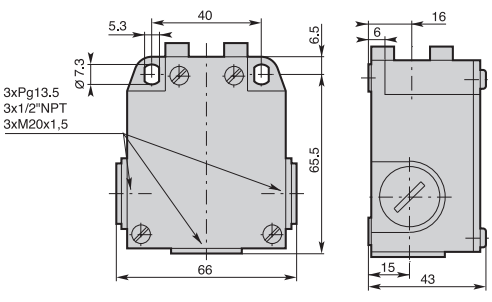
Operating Head Type

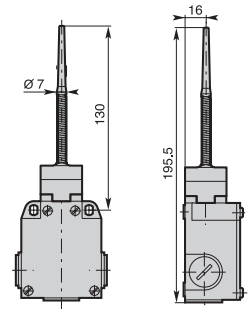
	E92 - Multidirectional nylon activator with stainless steel spring	E93 - Stainless steel spring multidirectional actuator	E99 - Pull action with ring
Conformity / ⊖ (N.C. contact with positive opening operation)			
Max actuation speed [m/s]	1,0	1,0	0,5
Min. force [N] or torque [Nm]: actuation / positive opening operation	0,18 / –	0,18 / –	25 / –

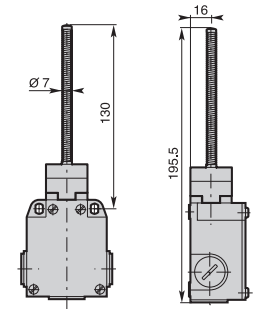
Additional Technical Datas

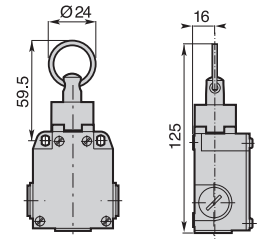
		E92 - Multidirectional nylon activator with stainless steel spring	E93 - Stainless steel spring multidirectional actuator	E99 - Pull action with ring
Z11 Snap Action Contacts (1NO + 1NC)	Order Code	**CM•E92Z11**	**CM•E93Z11**	**CM•E99Z11A**
	Operation Diagram	0 9° 21°	0 9° 21°	0 3.2 4.4 5.0 mm
X11 Non overlapping Slow Action Contacts (1NO + 1NC)	Order Code	**CM•E92X11**	**CM•E93X11**	**CM•E99X11A**
	Operation Diagram	0 12° 19°	0 12° 19°	0 2.5 5.0 mm 3.2
Y11 Overlapping Slow Action Contacts (1NO + 1NC)	Order Code	**CM•E92Y11**	**CM•E93Y11**	**CM•E99Y11A**
	Operation Diagram	0 23° 11°	0 23° 11°	0 3.4 5.0 mm 2.1
W02 Slow Action Contacts (2NC)	Order Code	**CM•E92W02**	**CM•E93W02**	**CM•E99W02A**
	Operation Diagram	0 11°	0 11°	0 3.4 5.0 mm
W20 Slow Action Contacts (2NO) ⊗	Order Code	**CM•E92W20**	**CM•E93W20**	**CM•E99W20A**
	Operation Diagram	0 10°	0 10°	0 3.6 5.0 mm
Z02 Snap Action Contacts (2NC)	Order Code	**CM•E92Z02**	**CM•E93Z02**	
	Operation Diagram	0 9° 20°	0 9° 20°	
X12 Non overlapping Slow Action Contacts (1NO + 2NC)	Order Code	**CM•E92X12**	**CM•E93X12**	**CM•E99X12A**
	Operation Diagram	0 12° 27°	0 12° 27°	0 1.6 5.0 mm 2.9
X21 Non overlapping Slow Action Contacts (2NO + 1NC)	Order Code	**CM•E92X21**	**CM•E93X21**	**CM•E99X21A**
	Operation Diagram	0 13° 27°	0 13° 27°	0 1.5 5.0 mm 3.0
W03 Simultaneous Slow Action Contacts (3NC)	Order Code	**CM•E92W03**	**CM•E93W03**	**CM•E99W03A**
	Operation Diagram	0 12°	0 12°	0 3.3 5.0 mm
W30 Simultaneous Slow Action Contacts (3NO) ⊗	Order Code	**CM•E92W30**	**CM•E93W30**	**CM•E99W30A**
	Operation Diagram	0 16°	0 16°	0 2.7 5.0 mm
Weight (packing per unit)	**[kg]**	**0,265**	**0,270**	**0,270**

Dimensions (in mm)









• Travel, operation diagrams and technical data . . . . pages 7, 11

Utilization precautions . . . . . pages 14, 15

NOTES

EP1G Limit Switches

Pre-wired - Double Insulation
Plastic Casing IP67 - 30 mm. width

Electrical Connection

Pre-Wired

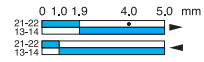
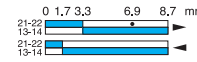
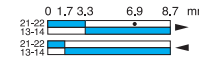
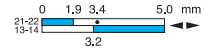
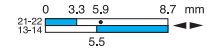
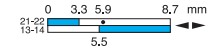
Cable: PVC 4 x 0,75 mm²

Lenght: 1 m.

(Different cables or lenghts, page 13)

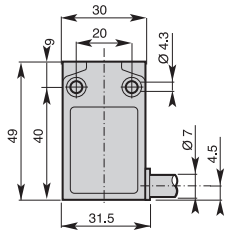
Operating Head Type	G11 - Plain plunger	G1• - Roller plunger G12: metal roller G13: nylon roller	G1• - Cross roller plunger G14: metal roller G15: nylon roller
Conformity / ⊕ (N.C. contact with positive opening operation)	⊕	⊕	⊕
Max actuation speed [m/s]	0,5	0,1	0,1
Min. force [N] or torque [Nm]: actuation / positive opening operation	15 / 30	10 / 30	10 / 30

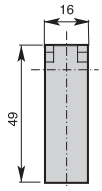
Additional Technical Datas

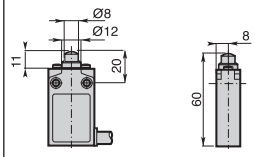
Z Snap Action Contacts (1NO + 1NC)		**Order Code**	**EP1G11Z**	**EP1G1•Z**	**EP1G1•Z**
		Operation Diagram			
X Non overlapping Slow Action Contacts (1NO + 1NC)		**Order Code**	**EP1G11X**	**EP1G1•X**	**EP1G1•X**
		Operation Diagram			

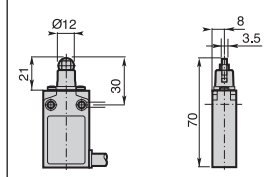
Weight (packing per unit) [kg]	0,125	0,130	0,130

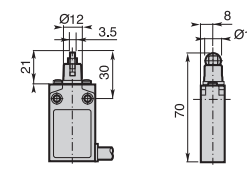
Dimensions (in mm)











• Travel, operation diagrams and technical data . . . . pages 7, 13

Utilization precautions . . . . . pages 14, 15

EP1G Limit Switches

Pre-wired - Double Insulation

Plastic Casing IP67 - 30 mm. width

G16 - Plain plunger with dust protection cup

0,5
15 / 30

G21 - Plain plunger with fixing nuts

0,5
15 / 30

G2• - Roller plunger with fixing nuts

G22: Metal roller
G23: Nylon roller

0,1
10 / 30

G2• - Cross roller plunger with fixing nuts

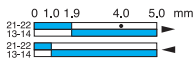
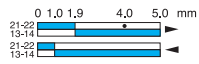
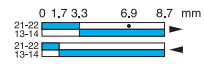
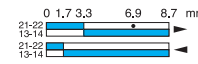
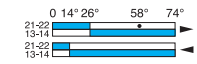
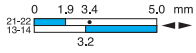
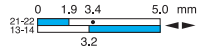
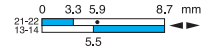
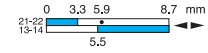
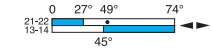
G24: metal roller
G25: nylon roller

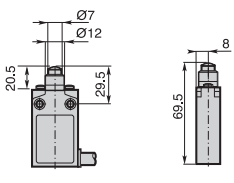
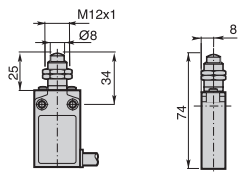
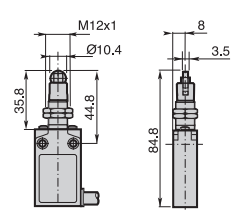
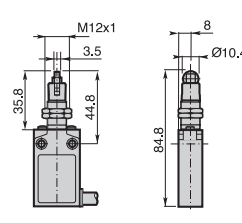
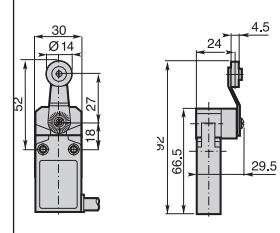
0,1
10 / 30

G4• - Ø 14 roller lever

G41: nylon roller
G42: metal roller
G43: ball bearing

1,5
0,08 / 0,28

EP1G16Z	EP1G21Z	EP1G2•Z	EP1G2•Z	EP1G4•Z
				
EP1G16X	**EP1G21X**	**EP1G2•X**	**EP1G2•X**	**EP1G4•X**
				

0,130	0,140	0,145	0,145	0,175
				

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Utilization precautions ..... pages 14, 15

EP1G Limit Switches

Pre-wired - Double Insulation
Plastic Casing IP67 - 30 mm. width

Electrical Connection

Pre-Wired

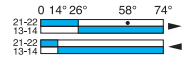
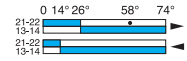
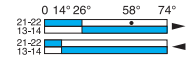
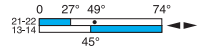
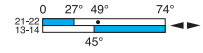
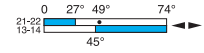
Cable: PVC 4 x 0,75 mm²

Lenght: 1 m.

(Different cables or lenghts, page 13)

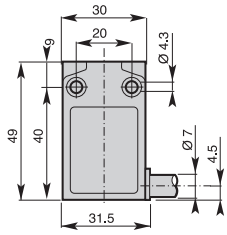
Operating Head Type	G45 - Ø 18 nylon roller lever	G51 - Adjustable lever with Ø 18 nylon roller	G5100 - Adjustable toothed lever (step 2 mm) with Ø 18 nylon roller
Conformity / ⊖ (N.C. contact with positive opening operation)	⊖	⊖	⊖
Max actuation speed [m/s]	1,5	1,5	1,5
Min. force [N] or torque [Nm]: actuation / positive opening operation	0,08 / 0,28	0,08 / 0,28	0,08 / 0,28

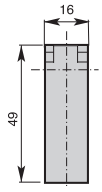
Additional Technical Datas

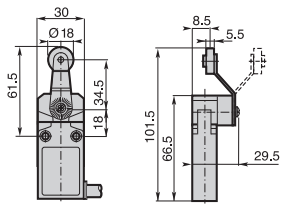
Z Snap Action Contacts (1NO + 1NC)		**Order Code**	**EP1G45Z**	**EP1G51Z** / **EP1G5100Z**
		Operation Diagram		 / 
X Non overlapping Slow Action Contacts (1NO + 1NC)		**Order Code**	**EP1G45X**	**EP1G51X** / **EP1G5100X**
		Operation Diagram		 / 

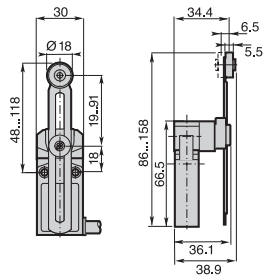
Weight (packing per unit) [kg]	0,180	0,190	0,190

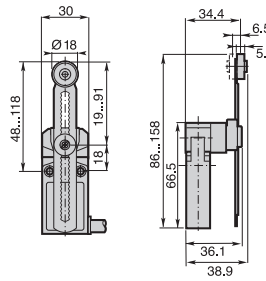
Dimensions (in mm)











• Travel, operation diagrams and technical data .... pages 7, 13

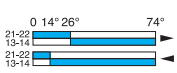
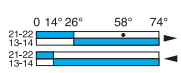
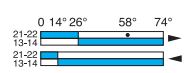
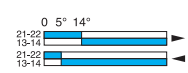
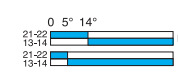
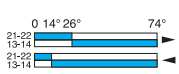
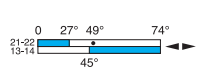
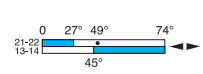
Utilization precautions ..... pages 14, 15

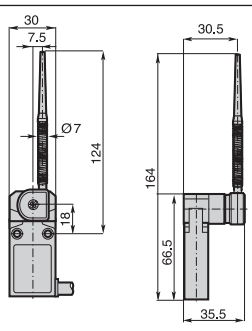
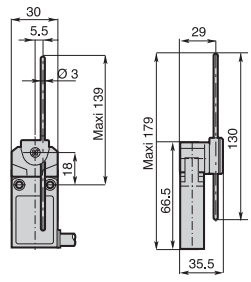
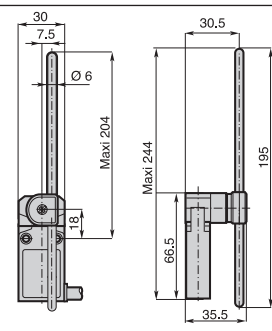
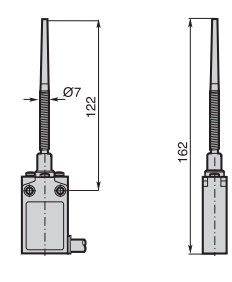
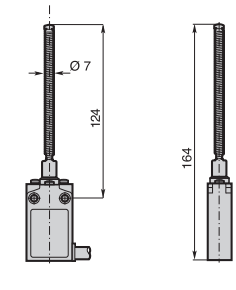
EP1G Limit Switches

Pre-wired - Double Insulation

Plastic Casing IP67 - 30 mm. width

G61 - Nylon actuator with stainless steel spring	**G7• - Adjustable rod lever** G71: stainless steel rod Ø3 G72: fiberglass rod Ø3 G75: square steel rod 3x3	**G7• - Adjustable Ø 6 rod lever** G73: nylon rod G74: fiberglass rod	**G92: Multidirectional nylon actuator with stainless steel spring**	**G93: Multidirectional actuator with stainless steel spring**
1,5 0,08 / –	1,5 0,08 / 0,28	1,5 0,08 / 0,28	1,0 0,10 / –	1,0 0,10 / –

EP1G61Z	**EP1G7•Z**	**EP1G7•Z**	**EP1G92Z**	**EP1G93Z**
				
EP1G61X	**EP1G7•X**	**EP1G7•X**		
				

0,190	**0,185**	**0,200**	**0,195**	**0,200**
				

• Travel, operation diagrams and technical data . . . . pages 7, 13

Utilization precautions . . . . . pages 14, 15

EP2G Limit Switches

Pre-wired - Double Insulation
Plastic Casing IP67 - 35 mm. width

Electrical Connection

Pre-Wired

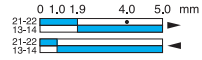
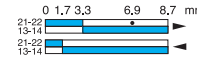
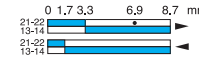
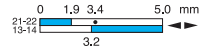
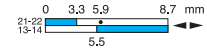
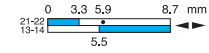
Cable: PVC 4 x 0,75 mm²

Lenght: 1 m.

(Different cables or lenghts, page 13)

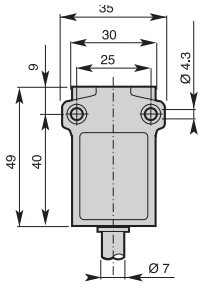
Operating Head Type	G11 - Plain plunger	G1• - Roller plunger G12: metal roller G13: nylon roller	G1• - Cross roller plunger G14: metal roller G15: nylon roller
Conformity / ⊕ (N.C. contact with positive opening operation)	⊕	⊕	⊕
Max actuation speed [m/s]	0,5	0,1	0,1
Min. force [N] or torque [Nm]: actuation / positive opening operation	15 / 30	10 / 30	10 / 30

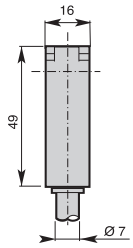
Additional Technical Datas

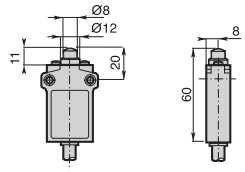
Z Snap Action Contacts (1NO + 1NC)		**Order Code**	**EP2G11Z**	**EP2G1•Z**	**EP2G1•Z**
		Operation Diagram			
X Non overlapping Slow Action Contacts (1NO + 1NC)		**Order Code**	**EP2G11X**	**EP2G1•X**	**EP2G1•X**
		Operation Diagram			

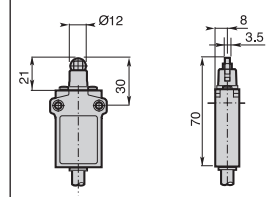
Weight (packing per unit) [kg]	0,125	0,130	0,130

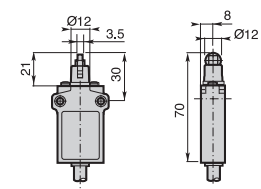
Dimensions (in mm)











• Travel, operation diagrams and technical data .... pages 7, 13

Utilization precautions ..... pages 14, 15

EP2G Limit Switches

Pre-wired - Double Insulation

Plastic Casing IP67 - 35 mm. width

G16 - Plain plunger with dust protection cup

0,5
15 / 30

G21 - Plain plunger with fixing nuts

0,5
15 / 30

G2• - Roller plunger with fixing nuts

G22: Metal roller
G23: Nylon roller

0,1
10 / 30

G2• - Cross roller plunger with fixing nuts

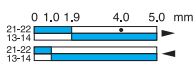
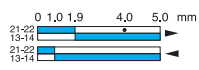
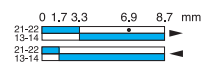
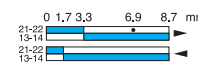
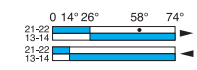
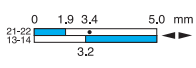
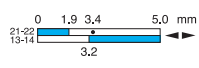
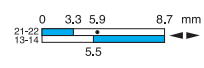
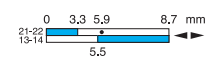
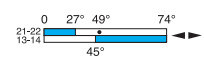
G24: metal roller
G25: nylon roller

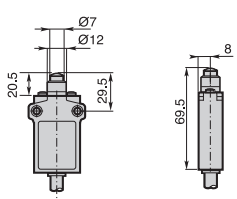
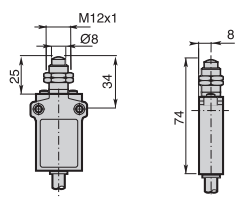
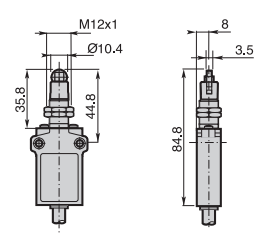
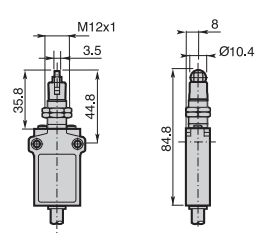
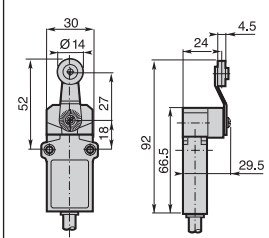
0,1
10 / 30

G4• - Ø 14 roller lever

G41: nylon roller
G42: metal roller
G43: ball bearing

1,5
0,08 / 0,28

EP2G16Z	**EP2G21Z**	**EP2G2•Z**	**EP2G2•Z**	**EP2G4•Z**
				
EP2G16X	**EP2G21X**	**EP2G2•X**	**EP2G2•X**	**EP2G4•X**
				

0,130	0,140	0,145	0,145	0,175
				

• Travel, operation diagrams and technical data .... pages 7, 13

Utilization precautions ..... pages 14, 15

EP2G Limit Switches

Pre-wired - Double Insulation
Plastic Casing IP67 - 35 mm. width

Electrical Connection

Pre-Wired

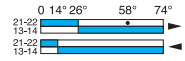
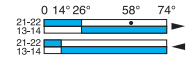
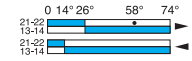
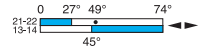
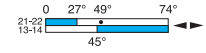
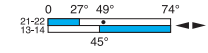
Cable: PVC 4 x 0,75 mm²

Lenght: 1 m.

(Different cables or lenghts, page 13)

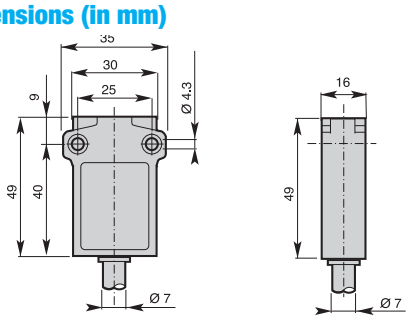
Operating Head Type	G45 - Ø 18 nylon roller lever	G51 - Adjustable lever with Ø 18 nylon roller	G5100 - Adjustable toothed lever (step 2 mm) with Ø 18 nylon roller
Conformity / ⊖ (N.C. contact with positive opening operation)	⊖	⊖	⊖
Max actuation speed [m/s]	1,5	1,5	1,5
Min. force [N] or torque [Nm]: actuation / positive opening operation	0,08 / 0,28	0,08 / 0,28	0,08 / 0,28

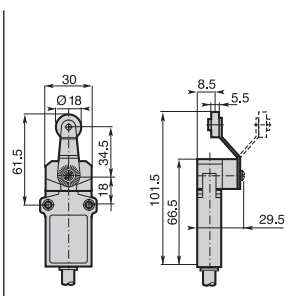
Additional Technical Datas

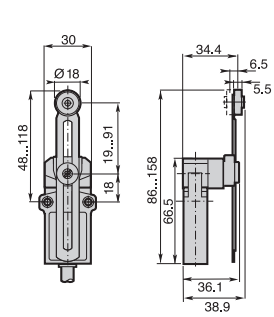
Z Snap Action Contacts (1NO + 1NC)		**Order Code**	**EP2G45Z**	**EP2G51Z**	**EP2G5100Z**
		Operation Diagram			
X Non overlapping Slow Action Contacts (1NO + 1NC)		**Order Code**	**EP2G45X**	**EP2G51X**	**EP2G5100X**
		Operation Diagram			

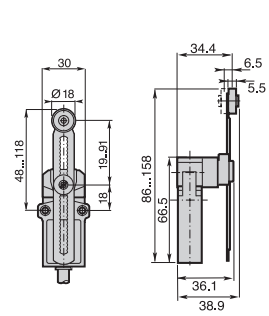
Weight (packing per unit) [kg]	0,180	0,190	0,190

Dimensions (in mm)









• Travel, operation diagrams and technical data .... pages 7, 13

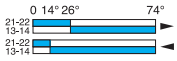
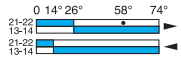
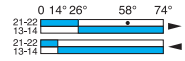
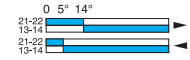
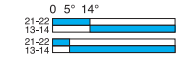
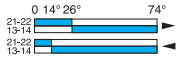
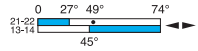
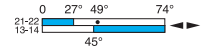
Utilization precautions ..... pages 14, 15

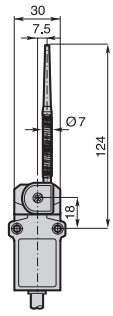
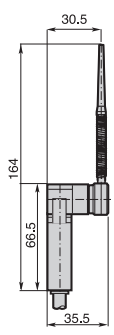
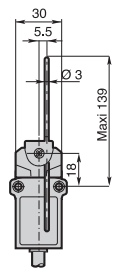
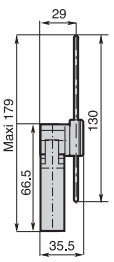
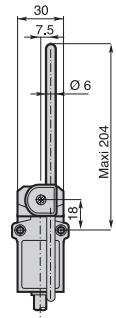
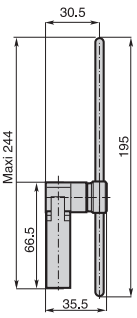
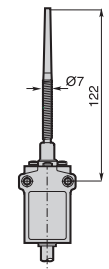
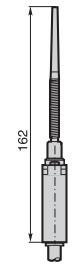
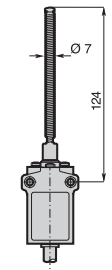
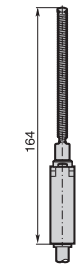
EP2G Limit Switches

Pre-wired - Double Insulation

Plastic Casing IP67 - 35 mm. width

G61 - Nylon actuator with stainless steel spring	**G7• - Adjustable rod lever** G71: stainless steel rod Ø3 G72: fiberglass rod Ø3 G75: square steel rod 3x3	**G7• - Adjustable Ø 6 rod lever** G73: nylon rod G74: fiberglass rod	**G92: Multidirectional nylon actuator with stainless steel spring**	**G93: Multidirectional actuator with stainless steel spring**
1,5 0,08 / –	1,5 0,08 / 0,28	1,5 0,08 / 0,28	1,0 0,10 / –	1,0 0,10 / –

EP2G61Z	**EP2G7•Z**	**EP2G7•Z**	**EP2G92Z**	**EP2G93Z**
				
EP2G61X	**EP2G7•X**	**EP2G7•X**		
				

0,190	**0,185**	**0,200**	**0,195**	**0,200**
 	 	 	 	 

• Travel, operation diagrams and technical data . . . . pages 7, 13

Utilization precautions . . . . . pages 14, 15

EM1G Limit Switches

Pre-wired

Metal Casing IP67 - 30 mm. width

Electrical Connection

Pre-Wired

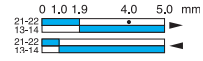
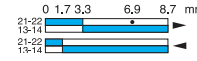
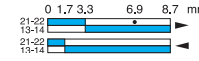
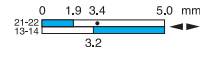
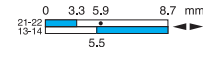
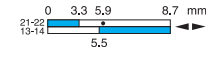
Cable: PVC 5 x 0,75 mm²

Lenght: 1 m.

(Different cables or lenghts, page 13)

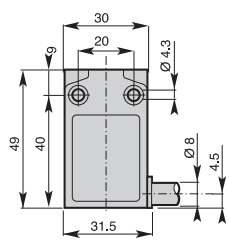
Operating Head Type	G11 - Plain plunger	G1• - Roller plunger G12: metal roller G13: nylon roller	G1• - Cross roller plunger G14: metal roller G15: nylon roller
Conformity / ⊖ (N.C. contact with positive opening operation)	⊖	⊖	⊖
Max actuation speed [m/s]	0,5	0,1	0,1
Min. force [N] or torque [Nm]: actuation / positive opening operation	15 / 30	10 / 30	10 / 30

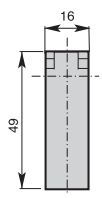
Additional Technical Datas

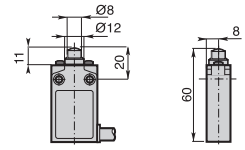
Z Snap Action Contacts (1NO + 1NC)		**Order Code**	**EM1G11Z**	**EM1G1•Z**	**EM1G1•Z**
		Operation Diagram			
X Non overlapping Slow Action Contacts (1NO + 1NC)		**Order Code**	**EM1G11X**	**EM1G1•X**	**EM1G1•X**
		Operation Diagram			

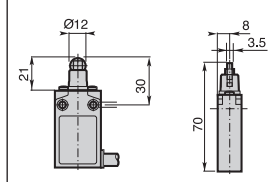
Weight (packing per unit) [kg]	0,175	0,180	0,180

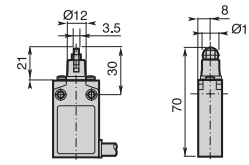
Dimensions (in mm)











• Travel, operation diagrams and technical data .... pages 7, 13

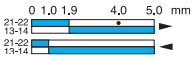
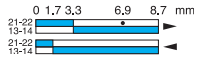
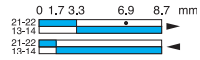
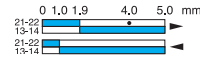
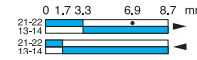
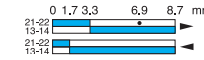
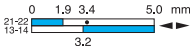
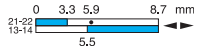
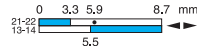
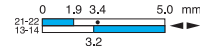
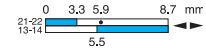
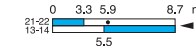
Utilization precautions ..... pages 14, 15

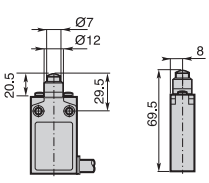
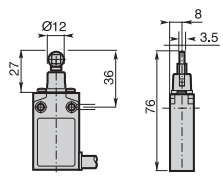
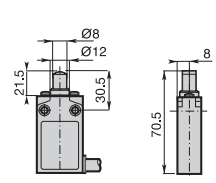
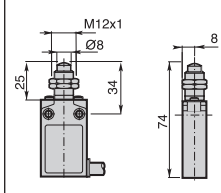
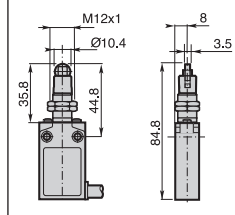
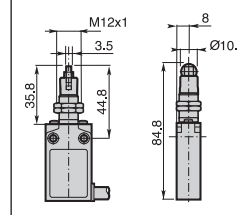
EM1G Limit Switches

Pre-wired

Metal Casing IP67 - 30 mm. width

G16 - Plain plunger with dust protection cup	G17 - Metal roller plunger with dust protection cup	G18 - Bevel plunger	G21 - Plain plunger with fixing nuts	G2• - Roller plunger with fixing nuts G22: Metal roller G23: Nylon roller	G2• - Cross roller plunger with fixing nuts G24: metal roller G25: nylon roller
0,5 15 / 30	0,1 10 / 30	0,5 10 / 30	0,5 15 / 30	0,1 10 / 30	0,1 10 / 30

EM1G16Z	EM1G17Z	EM1G18Z	EM1G21Z	EM1G2•Z	EM1G2•Z
					
EM1G16X	**EM1G17X**	**EM1G18X**	**EM1G21X**	**EM1G2•X**	**EM1G2•X**
					

0,180	0,190	0,185	0,190	0,195	0,195
					

• Travel, operation diagrams and technical data .... pages 7, 13

Utilization precautions ..... pages 14, 15

EM1G Limit Switches

Pre-wired

Metal Casing IP67 - 30 mm. width

Electrical Connection

Pre-Wired

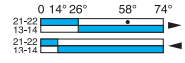
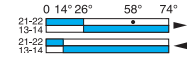
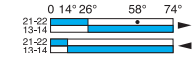
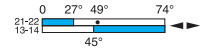
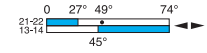
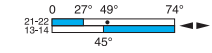
Cable: PVC 5 x 0,75 mm²

Lenght: 1 m.

(Different cables or lenghts, page 13)

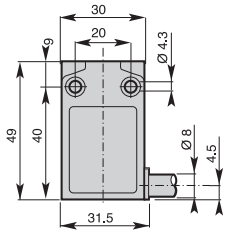
Operating Head Type	G4• - Ø 14 roller lever G41: nylon roller G42: metal roller G43: ball bearing	G4• - Ø 18 roller lever G45: nylon roller G46: metal roller	G5• - Adjustable lever with Ø 18 roller G51: nylon roller G53: metal roller
Conformity / ⊖ (N.C. contact with positive opening operation)	⊖	⊖	⊖
Max actuation speed [m/s]	1,5	1,5	1,5
Min. force [N] or torque [Nm]: actuation / positive opening operation	0,08 / 0,28	0,08 / 0,28	0,08 / 0,28

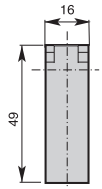
Additional Technical Datas

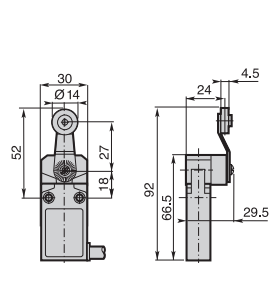
Z Snap Action Contacts (1NO + 1NC)		**Order Code**	**EM1G4•Z**	**EM1G4•Z**	**EM1G5•Z**
		Operation Diagram			
X Non overlapping Slow Action Contacts (1NO + 1NC)		**Order Code**	**EM1G4•X**	**EM1G4•X**	**EM1G5•X**
		Operation Diagram			

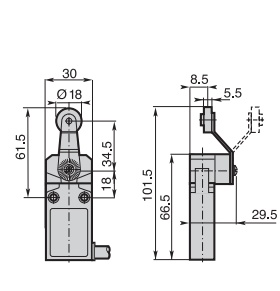
Weight (packing per unit) [kg]	0,225	0,230	0,240

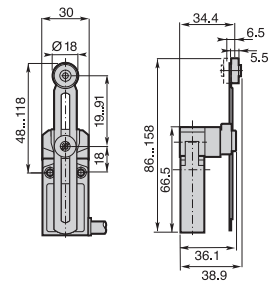
Dimensions (in mm)











• Travel, operation diagrams and technical data .... pages 7, 13

Utilization precautions ..... pages 14, 15

EM1G Limit Switches

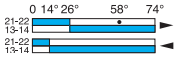
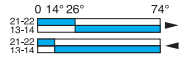
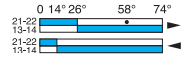
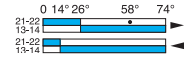
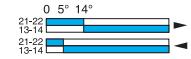
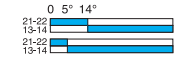
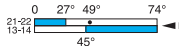
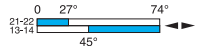
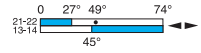
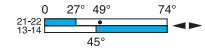
Pre-wired

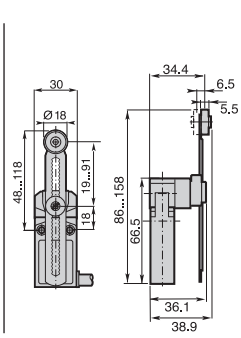
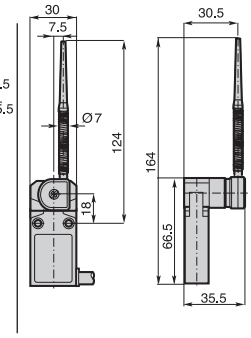
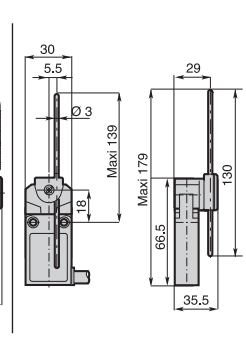
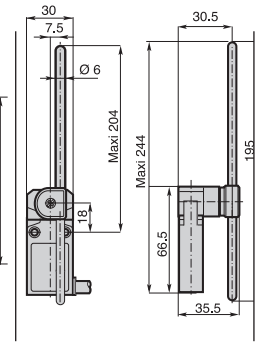
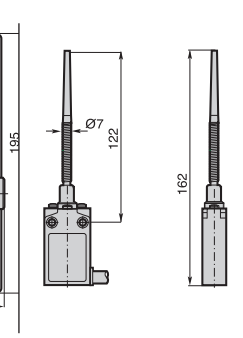
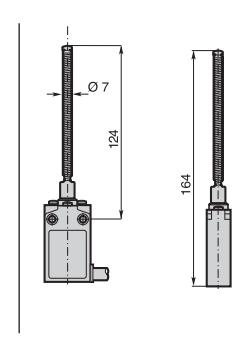
Metal Casing IP67 - 30 mm. width






G5100 - Adjustable toothed lever (step 2 mm) with Ø 18 nylon roller	G61 - Nylon actuator with stainless steel spring	G7• - Adjustable rod lever G71: stainless steel rod Ø3 G72: fiberglass rod Ø3 G75: square steel rod 3x3	G7• - Adjustable Ø 6 rod lever G73: nylon rod G74: fiberglass rod	G92: Multidirectional nylon actuator with stainless steel spring	G93: Multidirectional actuator with stainless steel spring
1,5 0,08 / 0,28	1,5 0,08 / –	1,5 0,08 / 0,28	1,5 0,08 / 0,28	1,0 0,10 / –	1,0 0,10 / –

EM1G5100Z	EM1G61Z	EM1G7•Z	EM1G7•Z	EM1G92Z	EM1G93Z
					
EM1G5100X	**EM1G61X**	**EM1G7•X**	**EM1G7•X**		
					

0,240	0,240	0,235	0,250	0,245	0,250
					

• Travel, operation diagrams and technical data .... pages 7, 13

Utilization precautions ..... pages 14, 15

EM2G Limit Switches

Pre-wired

Metal Casing IP67 - 35 mm. width

Electrical Connection

Pre-Wired

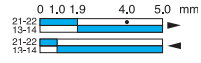
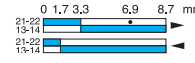
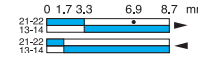
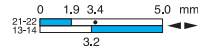
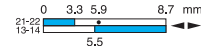
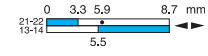
Cable: PVC 5 x 0,75 mm²

Lenght: 1 m.

(Different cables or lenghts, page 13)

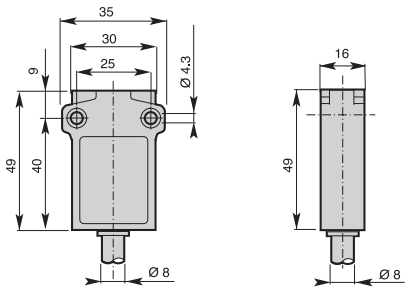
Operating Head Type	G11 - Plain plunger	G1• - Roller plunger G12: metal roller G13: nylon roller	G1• - Cross roller plunger G14: metal roller G15: nylon roller
Conformity / ⊖ (N.C. contact with positive opening operation)	⊖	⊖	⊖
Max actuation speed [m/s]	0,5	0,1	0,1
Min. force [N] or torque [Nm]: actuation / positive opening operation	15 / 30	10 / 30	10 / 30

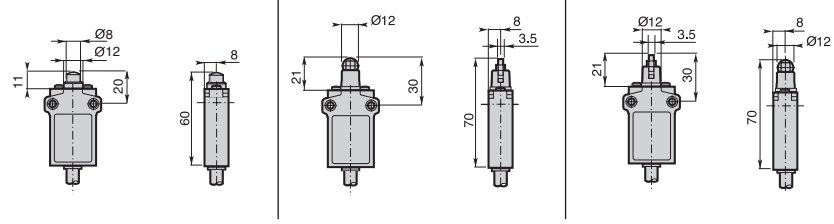
Additional Technical Datas

Z Snap Action Contacts (1NO + 1NC)		**Order Code**	**EM2G11Z**	**EM2G1•Z**	**EM2G1•Z**
		Operation Diagram			
X Non overlapping Slow Action Contacts (1NO + 1NC)		**Order Code**	**EM2G11X**	**EM2G1•X**	**EM2G1•X**
		Operation Diagram			

Weight (packing per unit) [kg]	0,180	0,185	0,185

Dimensions (in mm)





• Travel, operation diagrams and technical data .... pages 7, 13

Utilization precautions ..... pages 14, 15

EM2G Limit Switches

Pre-wired

Metal Casing IP67 - 35 mm. width

G16 - Plain plunger with dust protection cup

0,5
15 / 30

G17 - Metal roller plunger with dust protection cup

0,1
10 / 30

G18 - Bevel plunger

0,5
10 / 30

G21 - Plain plunger with fixing nuts

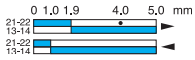
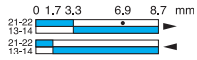
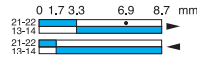
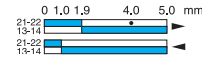
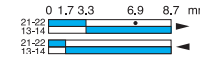
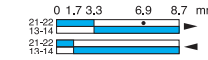
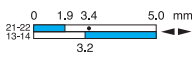
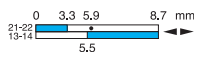
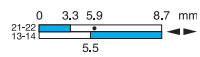
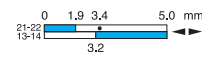
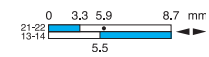
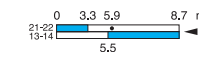
0,5
15 / 30

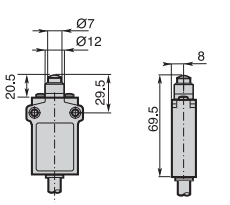
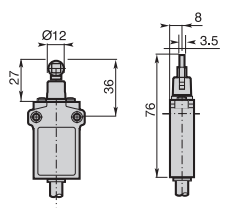
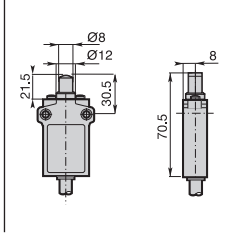
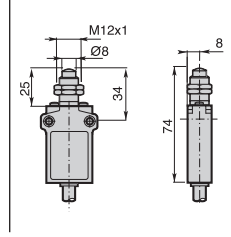
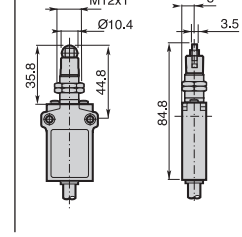
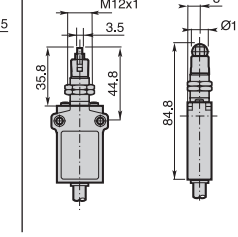
G2• - Roller plunger with fixing nuts
G22: Metal roller
G23: Nylon roller

0,1
10 / 30

G2• - Cross roller plunger with fixing nuts
G24: metal roller
G25: nylon roller

0,1
10 / 30

EM2G16Z	EM2G17Z	EM2G18Z	EM2G21Z	EM2G2•Z	EM2G2•Z
					
EM2G16X	**EM2G17X**	**EM2G18X**	**EM2G21X**	**EM2G2•X**	**EM2G2•X**
					

0,185	0,195	0,190	0,195	0,200	0,200
					

• Travel, operation diagrams and technical data .... pages 7, 13

Utilization precautions ..... pages 14, 15

EM2G Limit Switches

Pre-wired

Metal Casing IP67 - 35 mm. width

Electrical Connection

Pre-Wired

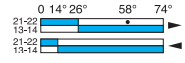
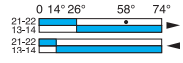
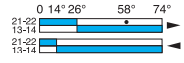
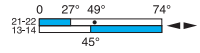
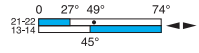
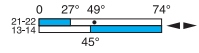
Cable: PVC 5 x 0,75 mm²

Lenght: 1 m.

(Different cables or lenghts, page 13)

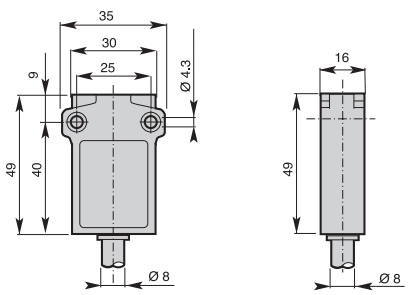
Operating Head Type	G4• - Ø 14 roller lever G41: nylon roller G42: metal roller G43: ball bearing	G4• - Ø 18 roller lever G45: metal roller G46: nylon roller	G5• - Adjustable lever with Ø 18 roller G51: nylon roller G53: metal roller
Conformity / ⊕ (N.C. contact with positive opening operation)	⊕	⊕	⊕
Max actuation speed [m/s]	1,5	1,5	1,5
Min. force [N] or torque [Nm]: actuation / positive opening operation	0,08 / 0,28	0,08 / 0,28	0,08 / 0,28

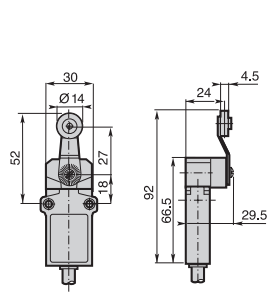
Additional Technical Datas

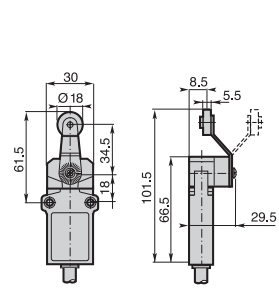
Z Snap Action Contacts (1NO + 1NC)		**Order Code**	**EM2G4•Z**	**EM2G4•Z**	**EM2G5•Z**
		Operation Diagram			
X Non overlapping Slow Action Contacts (1NO + 1NC)		**Order Code**	**EM2G4•X**	**EM2G4•X**	**EM2G5•X**
		Operation Diagram			

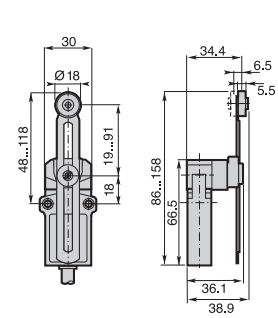
Weight (packing per unit) [kg]	0,230	0,235	0,245

Dimensions (in mm)









• Travel, operation diagrams and technical data .... pages 7, 13

Utilization precautions ..... pages 14, 15

EM2G Limit Switches

Pre-wired

Metal Casing IP67 - 35 mm. width

G5100 - Adjustable toothed lever (step 2 mm) with Ø 18 nylon roller

1,5
0,08 / 0,28

G61 - Nylon actuator with stainless steel spring

1,5
0,08 / –

G7• - Adjustable rod lever

G71: stainless steel rod Ø3
G72: fiberglass rod Ø3
G75: square steel rod 3x3

1,5
0,08 / 0,28

G7• - Adjustable Ø 6 rod lever

G73: nylon rod
G74: fiberglass rod

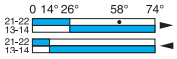
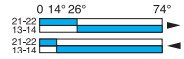
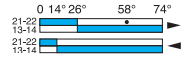
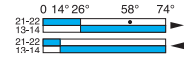
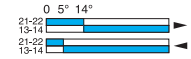
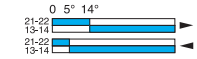
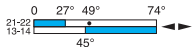
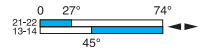
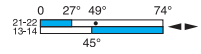
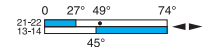
1,5
0,08 / 0,28

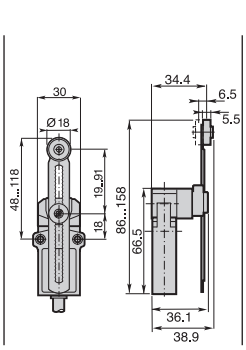
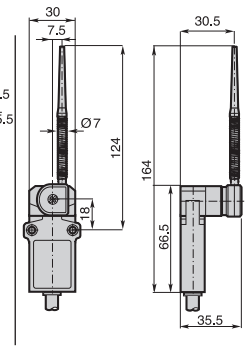
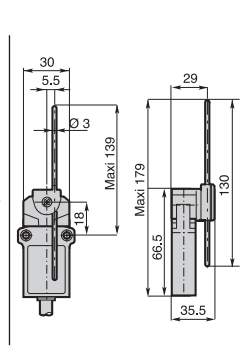
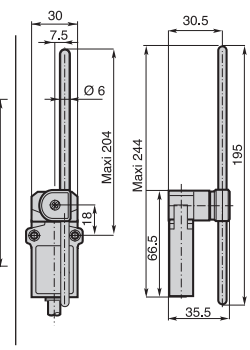
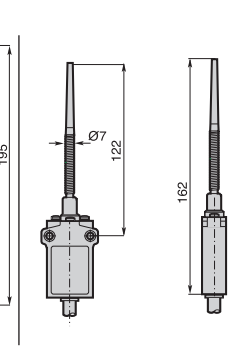
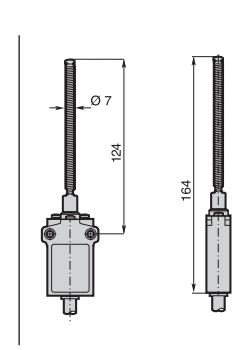
G92: Multidirectional nylon actuator with stainless steel spring

1,0
0,10 / –

G93: Multidirectional actuator with stainless steel spring

1,0
0,10 / –

EM2G5100Z	EM2G61Z	EM2G7•Z	EM2G7•Z	EM2G92Z	EM2G93Z
					
EM2G5100X	**EM2G61X**	**EM2G7•X**	**EM2G7•X**		
					

0,245	0,245	0,240	0,255	0,250	0,255
					

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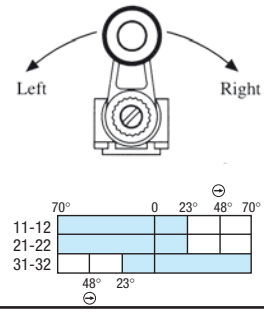
Utilization precautions ..... pages 14, 15

Limit Switches for special applications

BP•U series 40 mm. polymeric limit switches - IP 65 ⧈ - EN 50041 - 1 cables entry

Description



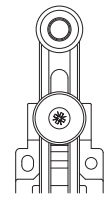
- The lever on the right open contacts 11-12 and 21-22
- The lever on the left open contacts 31-32
- Positive opening of the contacts on both the directions
- Other levers available

Cable inlets

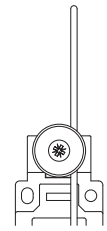
Replace the symbol • with the number of the required thread

BP1: PG 13.5
BP2: 1/2" NPT
BP5: M 20 x 1,5

Lever with nylon roller



Adjustable lever with nylon roller



Stainless steel rod Ø 3

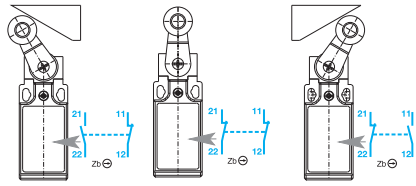
Contacts elements		⊖ U41	⊖ U51	⊖ U71
J03	(3NC)	BP•U41J03	BP•U51J03	BP•U71J03

AP• series 30 mm. polymeric limit switches - IP 65 ⧈ - EN 50047 - 1 cables entry

Cable inlets Replace the symbol • with the number of the required thread

AP1: PG 13.5 **AP2:** 1/2" NPT (with adapter) **AP3:** PG 11 **AP4:** M 16 x 1,5 **AP5:** M 20 x 1,5

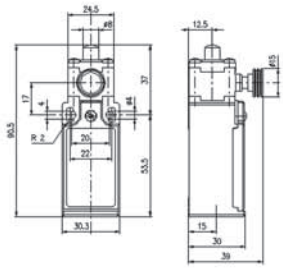
AP•V41J02 series



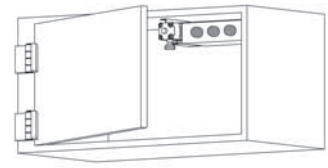
Description

The Switch is settled with 2NC contacts in free position.
The actuation of the lever causes the opening of the contact related to the actuating direction, leaving unchanged the status of the second contact. Both contacts have positive opening operation according to IEC/EN 60947-5-1 standards.

AP•R001Z11 series



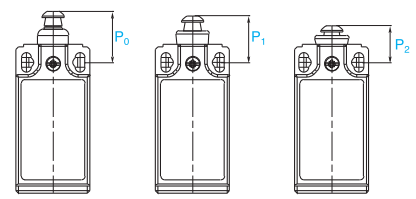
Example of application



Description

This particular limit switch has been developed in order to fulfill all the requests coming from applications in which there is the necessity to simulate the change over in contacts position without acting directly, on the plunger of the switch. The use of this device is particularly useful in the realization of electrical boards in order to simulate the closing of the door simply by pushing the yellow button on the limit switch; the assigned staff will then be able to work on the internal circuit to make modifications, maintenance, etc… The conditions of normal operation are automatically restored once the door of the electric board is closed.

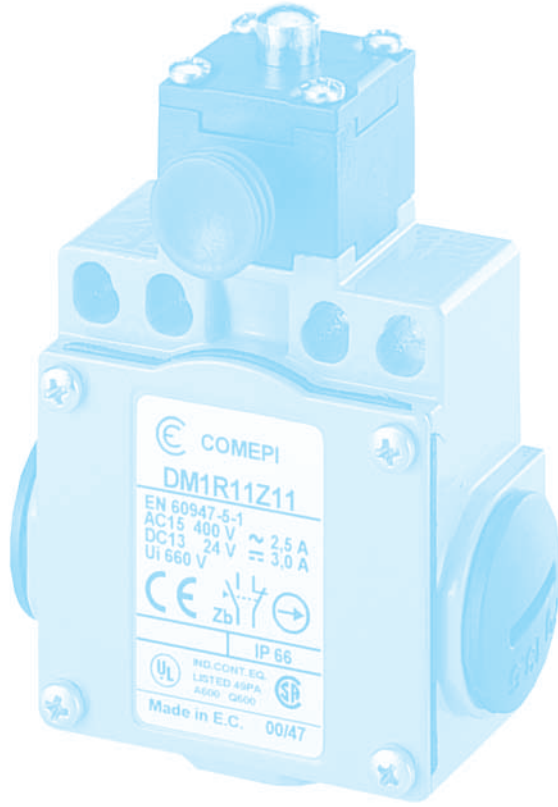
AP•R002J11R series



Description

The switch has been designed specifically for applications on over-speed devices; by actuating the plunger until the operating position P1, the electrical contacts switch and simultaneously the plunger reaches position P2 automatically. The device is restored by pulling the blue plunger until the free position P0. The switch can be supplied with 1NO+1NC contacts (AP•R002J11R) or with 2NC contacts (AP•R002J02R); all the NC contacts have positive opening operation..

SAFETY LIMIT SWITCHES



Application

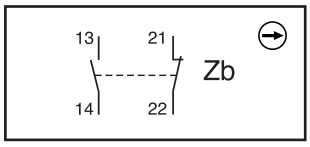
The Comepi limit switches are developed and manufactured according to the rules set out in IEC international publications and EN european standards.

Easy to use, electromechanical limit switches offer specific qualities:

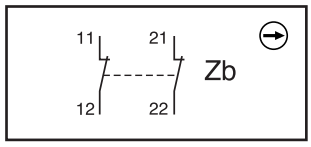
- Visible operation.
- Able to switch strong currents (10 A conventional thermal current).
- Precise operating points (consistency).
- Immune to electromagnetic disturbances.
- Electrically separated contacts.
- N.C. contacts with positive opening operation (⊖).

Contact Blocks

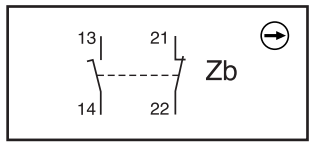
Z11 Snap action 1NO+1NC



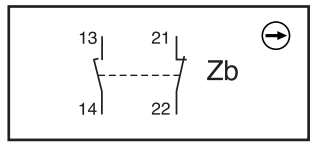
Z02 Snap action 2NC



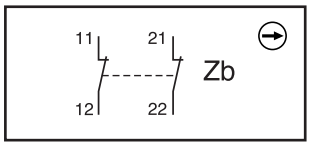
X11 Slow action break before make 1NO+1NC



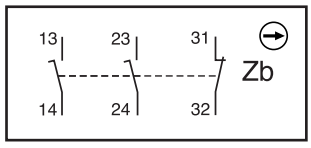
Y11 Slow action make before break 1NO+1NC



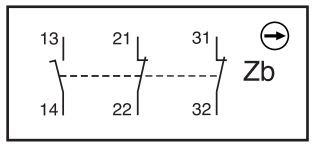
W02 Simultaneous slow action 2NC



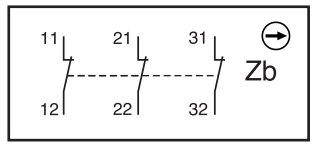
X21/X21P Slow action break before make 2NO+1NC



X12/X12P Slow action break before make 1NO+2NC



W03/W03P Simultaneous slow action 3NC



Main Technical Data

	SP, SBP, SDP series	SM, SBM, SCM, SDM series
Standards	IEC 947-5-1, EN 60947-5-1, UL 508, CSA C22-2 No 14	
Operating temperature range	-25°C... +70°C	
Protection against electrical shocks (acc. to IEC 536)	Class II	Class I
Protection degree (acc. to IEC 529)	IP65	IP 66
Rated insulation voltage (acc. to IEC 947-1)	U_i = 690V (SM, SDM series and contacts type X12P, X21P, W03P series: U_i = 400V)	
Rated impulsed withstand voltage (acc. to IEC 947-1)	U_{imp} = 6kV	
Short-circuit protection	Fuse 10A type gG (gI)	
Power category	A600 - Q600 (SM, SDM series and contacts type X12P, X21P, W03P: A300 - Q300)	
Rated operational current (acc. to IEC 947-5-1)	AC-15: 24V-10A; 230V-3,1A; 380V-1,9A DC-13: 24V-2,8A; 250V-0,27A	

Electrical connection

Replace the symbol • with the number of the required thread

1: PG 13.5

2: 1/2" NPT (Through adapter on SP and SDP series)

3: PG 11 (Available on SP, SM, SDP and SDM series)

4: M16x1,5 (Available on SP, SM, SDP and SDM series)

5: M20x1,5

Safety Limit Switches

Limit switches with keys, shaft lever or pull wire

SP_K Series

30 mm
polymeric casing.
1 cable inlet. IP 65

K20
90° adjustable head

K120
Fully turnable head

K71
Zinc plated steel shaft
K72
Stainless steel shaft

K61
Zinc plated steel lever

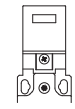
K96
Pull wire without reset
for simple stop

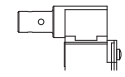
K98
Pull wire with reset
for emergency stop

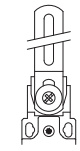
Contact blocks		→ K20	→ K120	→ K7•	→ K61
Z11	(1NO+1NC)	SP•K20Z11	SP•K120Z11	SP•K7•Z11	SP•K61Z11
Z02	(2NC)	SP•K20Z02	SP•K120Z02	SP•K7•Z02	SP•K61Z02
X11	(1NO+1NC)	SP•K20X11	SP•K120X11	SP•K7•X11	SP•K61X11
Y11	(1NO+1NC)	SP•K20Y11	SP•K120Y11	SP•K7•Y11	SP•K61Y11
W02	(2NC)	SP•K20W02	SP•K120W02	SP•K7•W02	SP•K61W02
X21P	(2NO+1NC)	SP•K20X21P	SP•K120X21P	SP•K7•X21P	SP•K61X21P
X12P	(1NO+2NC)	SP•K20X12P	SP•K120X12P	SP•K7•X12P	SP•K61X12P
W03P	(3NC)	SP•K20W03P	SP•K120W03P	SP•K7•W03P	SP•K61W03P

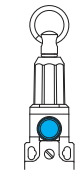
SM_K Series

30 mm metal casing.
1 cable inlet. IP 66





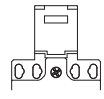


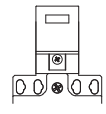


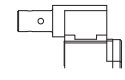
Contact blocks		→ K20	→ K120	→ K7•	→ K61	→ K96	→ K98
Z11	(1NO+1NC)	SM•K20Z11	SM•K120Z11	SM•K7•Z11	SM•K61Z11		
Z02	(2NC)	SM•K20Z02	SM•K120Z02	SM•K7•Z02	SM•K61Z02		
X11	(1NO+1NC)	SM•K20X11	SM•K120X11	SM•K7•X11	SM•K61X11	SM•K96X11	SM•K98X11
Y11	(1NO+1NC)	SM•K20Y11	SM•K120Y11	SM•K7•Y11	SM•K61Y11		
W02	(2NC)	SM•K20W02	SM•K120W02	SM•K7•W02	SM•K61W02	SM•K96W02	SM•K98W02
X21P	(2NO+1NC)	SM•K20X21P	SM•K120X21P	SM•K7•X21P	SM•K61X21P	SM•K96X21P	SM•K98X21P
X12P	(1NO+2NC)	SM•K20X12P	SM•K120X12P	SM•K7•X21P	SM•K61X12P	SM•K96X12P	SM•K98X12P
W03P	(3NC)	SM•K20W03P	SM•K120W03P	SM•K7•W03P	SM•K61W03P	SM•K96W03P	SM•K98W03P

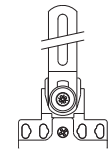
SDP_K Series

50 mm polymeric
casing.
2 cable inlets. IP 65





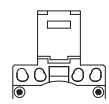


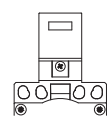


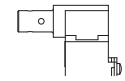
Contact blocks		→ K20	→ K120	→ K7•	→ K61
Z11	(1NO+1NC)	SDP•K20Z11	SDP•K120Z11	SDP•K7•Z11	SDP•K61Z11
Z02	(2NC)	SDP•K20Z02	SDP•K120Z02	SDP•K7•Z02	SDP•K61Z02
X11	(1NO+1NC)	SDP•K20X11	SDP•K120X11	SDP•K7•X11	SDP•K61X11
Y11	(1NO+1NC)	SDP•K20Y11	SDP•K120Y11	SDP•K7•Y11	SDP•K61Y11
W02	(2NC)	SDP•K20W02	SDP•K120W02	SDP•K7•W02	SDP•K61W02
X21P	(2NO+1NC)	SDP•K20X21P	SDP•K120X21P	SDP•K7•X21P	SDP•K61X21P
X12P	(1NO+2NC)	SDP•K20X12P	SDP•K120X12P	SDP•K7•X12P	SDP•K61X12P
W03P	(3NC)	SDP•K20W03P	SDP•K120W03P	SDP•K7•W03P	SDP•K61W03P

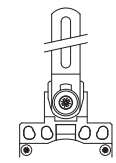
SDM_K Series

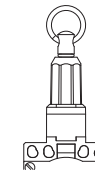
50 mm metal casing.
3 cable inlets. IP 66

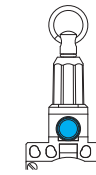












Contact blocks		→ K20	→ K120	→ K7•	→ K61	→ K96	→ K98
Z11	(1NO+1NC)	SDM•K20Z11	SDM•K120Z11	SDM•K7•Z11	SDM•K61Z11		
Z02	(2NC)	SDM•K20Z02	SDM•K120Z02	SDM•K7•Z02	SDM•K61Z02		
X11	(1NO+1NC)	SDM•K20X11	SDM•K120X11	SDM•K7•X11	SDM•K61X11	SDM•K96X11	SDM•K98X11
Y11	(1NO+1NC)	SDM•K20Y11	SDM•K120Y11	SDM•K7•Y11	SDM•K61Y11		
W02	(2NC)	SDM•K20W02	SDM•K120W02	SDM•K7•W02	SDM•K61W02	SDM•K96W02	SDM•K98W02
X21P	(2NO+1NC)	SDM•K20X21P	SDM•K120X21P	SDM•K7•X21P	SDM•K61X21P	SDM•K96X21P	SDM•K98X21P
X12P	(1NO+2NC)	SDM•K20X12P	SDM•K120X12P	SDM•K7•X12P	SDM•K61X12P	SDM•K96X12P	SDM•K98X12P
W03P	(3NC)	SDM•K20W03P	SDM•K120W03P	SDM•K7•W03P	SDM•K61W03P	SDM•K96W03P	SDM•K98W03P

Safety Limit Switches

Limit switches with keys, shaft lever or pull wire

SBM_K Series

40 mm aluminium casing.
1 cable inlet. IP 66

K30/K40
Key operated
90° adjustable head

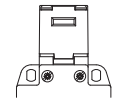
K97
Pull wire without reset
for simple stop

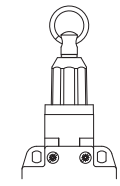
K99
Pull wire with reset
for emergency stop

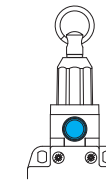
Contact blocks		K40	K97	K99
Z11	**(1NO+1NC)**	SBM•K40Z11		
Z02	**(2NC)**	SBM•K40Z02		
X11	**(1NO+1NC)**	SBM•K40X11	SBM•K97X11	SBM•K99X11
Y11	**(1NO+1NC)**	SBM•K40Y11		
W02	**(2NC)**	SBM•K40W02	SBM•K97W02	SBM•K99W02
X21	**(2NO+1NC)**	SBM•K40X21	SBM•K97X21	SBM•K99X21
X12	**(1NO+2NC)**	SBM•K40X12	SBM•K97X12	SBM•K99X12
W03	**(3NC)**	SBM•K40W03	SBM•K97W03	SBM•K99W03

SCM_K Series

60 mm aluminium casing.
3 cable inlets. IP 66



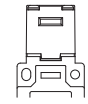




Contact blocks		K40	K97	K99
Z11	**(1NO+1NC)**	SCM•K40Z11		
Z02	**(2NC)**	SCM•K40Z02		
X11	**(1NO+1NC)**	SCM•K40X11	SCM•K97X11	SCM•K99X11
Y11	**(1NO+1NC)**	SCM•K40Y11		
W02	**(2NC)**	SCM•K40W02	SCM•K97W02	SCM•K99W02
X21	**(2NO+1NC)**	SCM•K40X21	SCM•K97X21	SCM•K99X21
X12	**(1NO+2NC)**	SCM•K40X12	SCM•K97X12	SCM•K99X12
W03	**(3NC)**	SCM•K40W03	SCM•K97W03	SCM•K99W03

SBP_K Series

40 mm polymeric
casing.
1 cable inlet. IP 65



Contact blocks		K30
Z11	**(1NO+1NC)**	SBP•K30Z11
Z02	**(2NC)**	SBP•K30Z02
X11	**(1NO+1NC)**	SBP•K30X11
Y11	**(1NO+1NC)**	SBP•K30Y11
W02	**(2NC)**	SBP•K30W02
X21	**(2NO+1NC)**	SBP•K30X21
X12	**(1NO+2NC)**	SBP•K30X12
W03	**(3NC)**	SBP•K30W03

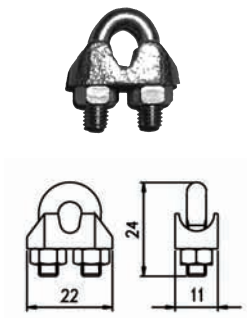
Operating keys (to be ordered separately)

Description	Bent key	Flat key	Bent key	Flat key	Shock absorbing bent key	Shock absorbing flat key	Adjustable joint key
Centre distance fixing holes	22 mm.	22 mm.	13 mm.	13 mm.	15 mm.	15 mm.	40 mm.
	Code	**Code**	**Code**	**Code**	**Code**	**Code**	**Code**
For operating heads K20 and K120	**13**	**14**	**15**	**16**	**17**	**18**	**19**
For operating heads K30 and K40			**35**	**36**			**39**

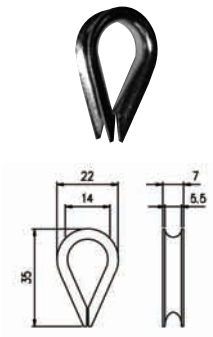
Accessories

OCC 08
Stay Bolt

MOR 05
Rope Clamp



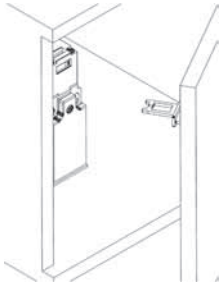
RED 05
Rope eye



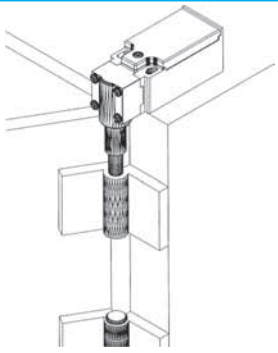
FUN 05
Rope ø 5mm

Code	Meters
FUN05M010	10
FUN05M015	15
FUN05M020	20
FUN05M025	25
FUN05M102	102

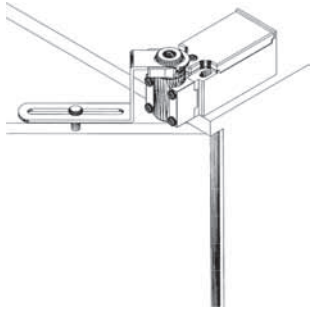
Examples of applications



Key safety switch

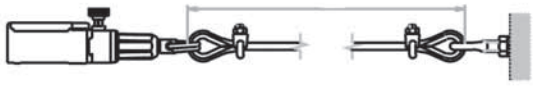


Shaft safety switch

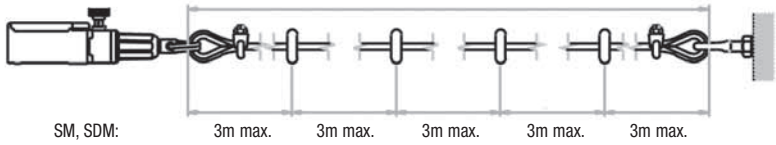


Z lever safety switch

SM, SDM: 6m max.
SBM, SCM: 16m max.



SM, SDM: 15m max.
SBM, SCM: 25m max.



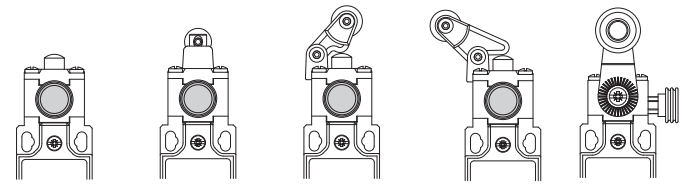
SM, SDM:	3m max.	3m max.	3m max.	3m max.	3m max.
SBM, SCM:	3÷5m max.	3÷5m max.	3÷5m max.	3÷5m max.	3÷5m max.

Pull wire safety switch

AP_R series 30 mm. polymeric limit switches - IP 65 ⧈
EN 50047 - 1 cables entry

Cable inlets

AP1: PG 13.5
AP2: 1/2" NPT (with adapter)
AP3: PG 11
AP4: M 16 x 1,5
AP5: M 20 x 1,5



Steel plunger with reset | Steel plunger with nylon roller with reset | Steel plunger with nylon roller with reset | Steel plunger with nylon roller with reset | Lever with nylon roller with reset

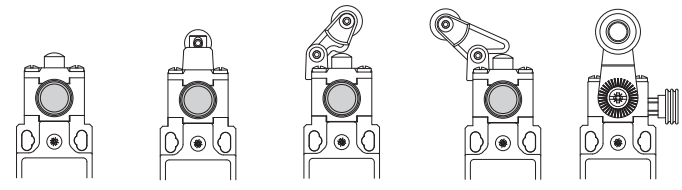
Contact blocks		⊖ R11	⊖ R13	⊖ R31	⊖ R32	⊖ R41
Z11	(1NO+1NC)	AP•R11Z11	AP•R13Z11	AP•R31Z11	AP•R32Z11	AP•R41Z11
Z02	(2NC)	AP•R11Z02	AP•R13Z02	AP•R31Z02	AP•R32Z02	AP•R41Z02
X11	(1NO+1NC)	AP•R11X11	AP•R13X11	AP•R31X11	AP•R32X11	AP•R41X11
W02	(2NC)	AP•R11W02	AP•R13W02	AP•R31W02	AP•R32W02	AP•R41W02
X21P	(2NO+1NC)	AP•R11X21P	AP•R13X21P	AP•R31X21P	AP•R32X21P	AP•R41X21P
X12P	(1NO+2NC)	AP•R11X12P	AP•R13X12P	AP•R31X12P	AP•R32X12P	AP•R41X12P
W03P	(3NC)	AP•R11W03P	AP•R13W03P	AP•R31W03P	AP•R32W03P	AP•R41W03P

Other versions available on request

AM_R series 30 mm. metal limit switches - with polymeric working heads - IP 66
1 cables entry

Cable inlets

AM1: PG 13.5
AM2: 1/2" NPT
AM3: PG 11
AM4: M 16 x 1,5
AM5: M 20 x 1,5



Steel plunger with reset | Steel plunger with nylon roller with reset | Steel plunger with nylon roller with reset | Steel plunger with nylon roller with reset | Lever with nylon roller with reset

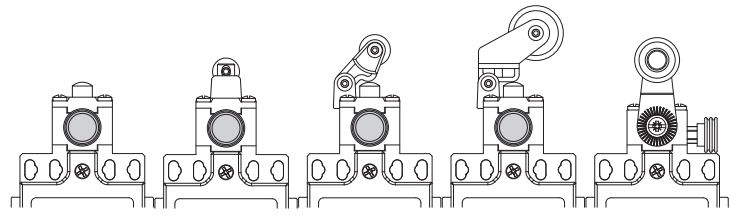
Contact blocks		⊖ R11	⊖ R13	⊖ R31	⊖ R32	⊖ R41
Z11	(1NO+1NC)	AM•R11Z11	AM•R13Z11	AM•R31Z11	AM•R32Z11	AM•R41Z11
Z02	(2NC)	AM•R11Z02	AM•R13Z02	AM•R31Z02	AM•R32Z02	AM•R41Z02
X11	(1NO+1NC)	AM•R11X11	AM•R13X11	AM•R31X11	AM•R32X11	AM•R41X11
W02	(2NC)	AM•R11W02	AM•R13W02	AM•R31W02	AM•R32W02	AM•R41W02
X21P	(2NO+1NC)	AM•R11X21P	AM•R13X21P	AM•R31X21P	AM•R32X21P	AM•R41X21P
X12P	(1NO+2NC)	AM•R11X12P	AM•R13X12P	AM•R31X12P	AM•R32X12P	AM•R41X12P
W03P	(3NC)	AM•R11W03P	AM•R13W03P	AM•R31W03P	AM•R32W03P	AM•R41W03P

Other versions available on request

DP_R series 50 mm. polymeric limit switches - IP 65
2 cables entries

Cable inlets

DP1: PG 13.5
DP2: 1/2" NPT (with adapter)
DP3: PG 11
DP4: M 16 x 1,5
DP5: M 20 x 1,5



Steel plunger with reset | Steel plunger with nylon roller with reset | Steel plunger with nylon roller with reset | Steel plunger with nylon roller with reset | Lever with nylon roller with reset

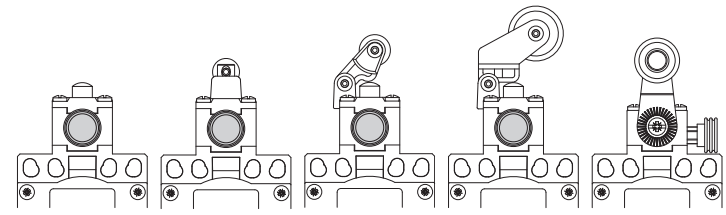
Contact blocks		R11	R13	R31	R38	R41
Z11	(1NO+1NC)	DP•R11Z11	DP•R13Z11	DP•R31Z11	DP•R38Z11	DP•R41Z11
Z02	(2NC)	DP•R11Z02	DP•R13Z02	DP•R31Z02	DP•R38Z02	DP•R41Z02
X11	(1NO+1NC)	DP•R11X11	DP•R13X11	DP•R31X11	DP•R38X11	DP•R41X11
W02	(2NC)	DP•R11W02	DP•R13W02	DP•R31W02	DP•R38W02	DP•R41W02
X21P	(2NO+1NC)	DP•R11X21P	DP•R13X21P	DP•R31X21P	DP•R38X21P	DP•R41X21P
X12P	(1NO+2NC)	DP•R11X12P	DP•R13X12P	DP•R31X12P	DP•R38X12P	DP•R41X12P
W03P	(3NC)	DP•R11W03P	DP•R13W03P	DP•R31W03P	DP•R38W03P	DP•R41W03P

Other versions available on request

DM_R series 50 mm. metal limit switches - with polymeric working heads - IP 66
3 cables entries

Cable inlets

DM1: PG 13.5
DM2: 1/2" NPT
DM3: PG 11
DM4: M 16 x 1,5
DM5: M 20 x 1,5



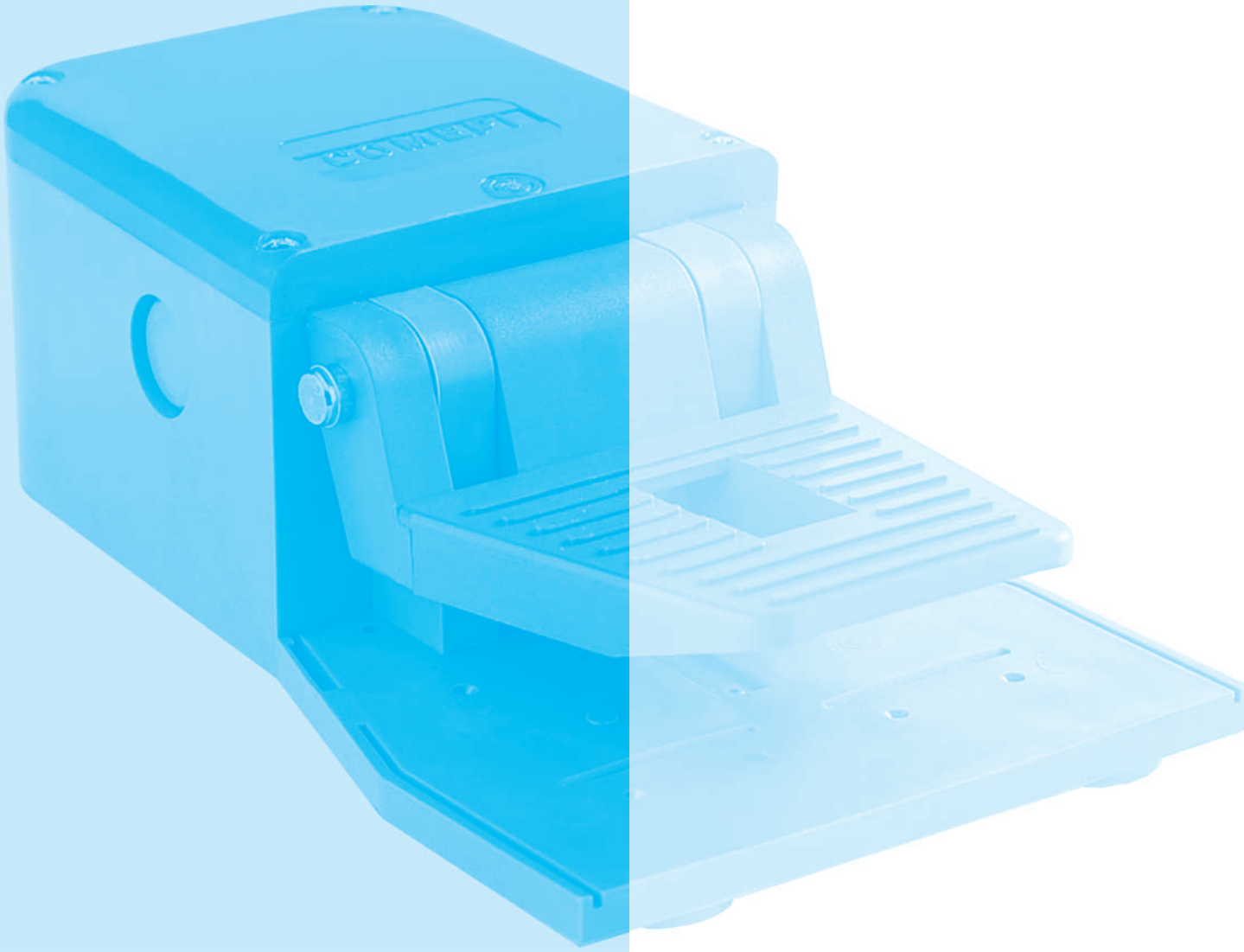
Steel plunger with reset | Steel plunger with nylon roller with reset | Steel plunger with nylon roller with reset | Steel plunger with nylon roller with reset | Lever with nylon roller with reset

Contact blocks		R11	R13	R31	R38	R41
Z11	(1NO+1NC)	DM•R11Z11	DM•R13Z11	DM•R31Z11	DM•R38Z11	DM•R41Z11
Z02	(2NC)	DM•R11Z02	DM•R13Z02	DM•R31Z02	DM•R38Z02	DM•R41Z02
X11	(1NO+1NC)	DM•R11X11	DM•R13X11	DM•R31X11	DM•R38X11	DM•R41X11
W02	(2NC)	DM•R11W02	DM•R13W02	DM•R31W02	DM•R38W02	DM•R41W02
X21P	(2NO+1NC)	DM•R11X21P	DM•R13X21P	DM•R31X21P	DM•R38X21P	DM•R41X21P
X12P	(1NO+2NC)	DM•R11X12P	DM•R13X12P	DM•R31X12P	DM•R38X12P	DM•R41X12P
W03P	(3NC)	DM•R11W03P	DM•R13W03P	DM•R31W03P	DM•R38W03P	DM•R41W03P

Other versions available on request

NOTES

FOOT SWITCHES



PS... / PD... Foot Switches

Double insulation - Plastic Casing IP65

Description

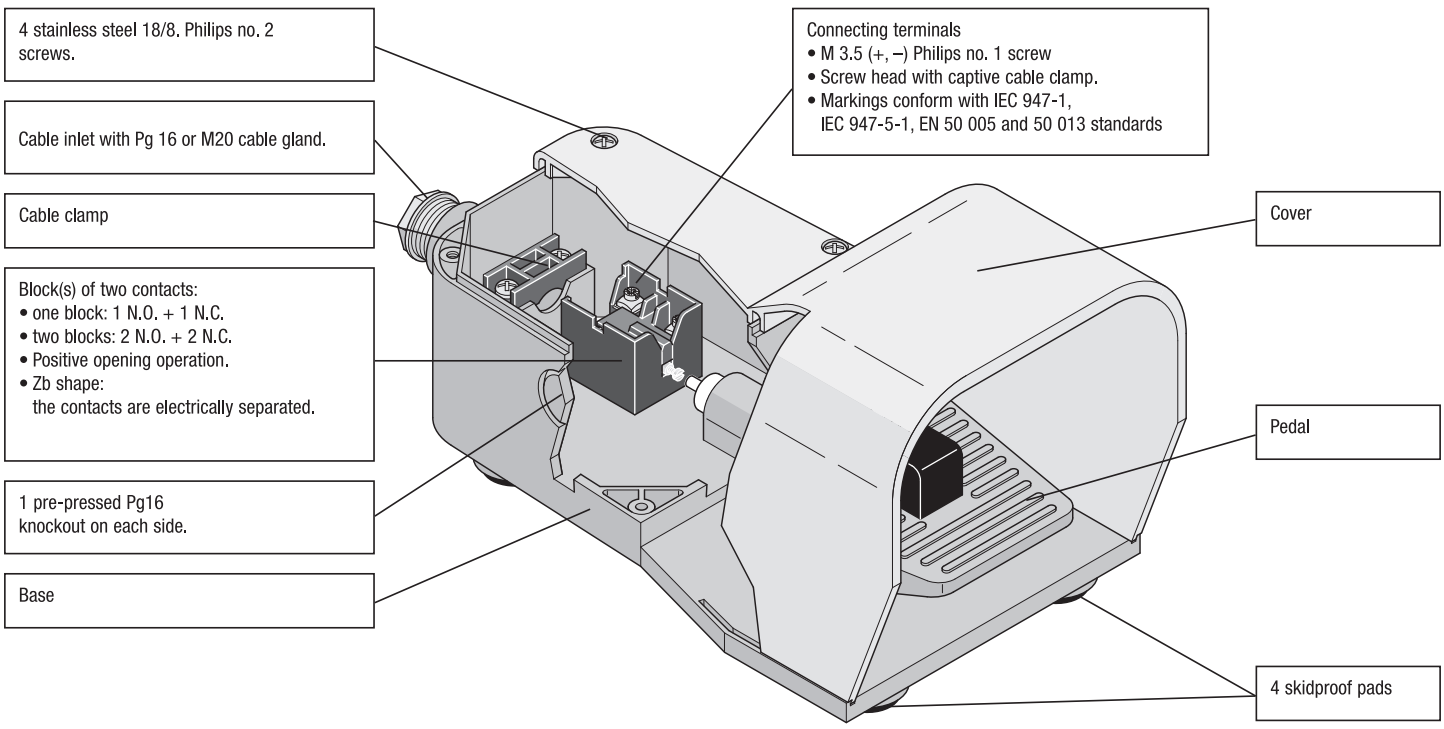
Applications

Foot switch operated machines such as: shearing machines, spinning machines, spinning lathers, machine tools, wrapping machines, riveting presses, etc.
Foot switches come in five operation formats:

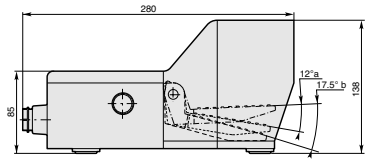
- **Free movement:** contact position follows pedal movement: actuated when the pedal is pushed down, released when pedal is in state of rest.
- **Foot switch locked in neutral position:** same operation as above, after unlocking the pedal with the end of the foot.
- **Foot switch latched in low position:** same operation as free movement, excepted that a state of rest is obtained only after having unlatched the pedal with the end of the foot.
- **Free movement with two-stage actuating force:** two different contact blocks are actuated with a different force on the lever.
- **Foot switch locked in neutral position with two-stage actuating force:** same operation as above, after unlocking the pedal with the end of the foot

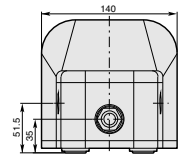
Description of the switch

- **Dimensions:** 280 x 140 x138mm.
- **Materials:** **Standard version (IMQ approved):** Base, cover and pedal made of shock resistant ABS material.
  Self-extinguishing / V0 (IMQ, UL, CSA approved): Base, cover and pedal made of Polycarbonate/ABS-V0.
  Metal version / V0-M (IMQ, UL, CSA approved): Cover made in die cast aluminium, base and pedal made of Polycarbonate/ABS-V0.
- **Colour choice:** Grey base; grey, yellow or red cover.
- **Variations:** Grey base, half-red cover. Especially used for emergency stop function.



Dimensions (in mm)





• **Technical data** ..... page 88 • **Accessories** ..... page 86

PS... / PD... Foot Switches

Double insulation - Plastic Casing IP65

Description

Symbols

Example: P S 1 2 1 1 / V0

Structure: P □ □ □ □ □ / □

Type
S = Simple Foot Switch
D = Double Foot Switch

Electrical connection
1 = Pg 16 cable gland
2 = M20 cable gland

Devices
1 = Free movement of the lever
2 = Movement of the lever dependend of the safety device notch
3 = Device to maintain the lever in lowered down position
4 = Free movement with two-stage actuating force
5 = With safety device notch and two-stage actuating force

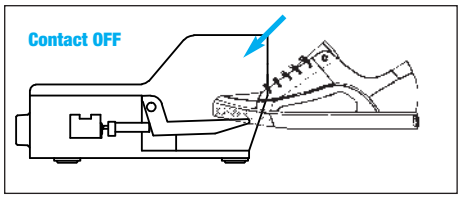
Contact blocks
1 - One (NO+NC) snap action contact
2 - One (NO+NC) slow action contact
3 - Two (NO+NC) snap action contacts
4 - Two (NO+NC) slow action contacts

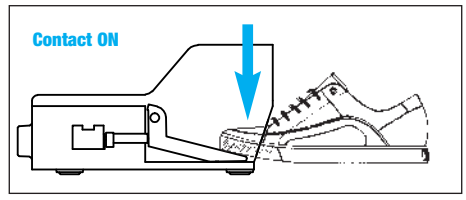
Cover material
– = Shock resistant ABS (standard)
V0 = UL approved self-extinguishing
V0-M = UL approved with aluminium cover

Cover colour **1 =** Yellow / **2 =** Grey / **3 =** Yellow + Grey (PD series)
4 = Red / **5 =** Half red cover / **6 =** Light grey base and cover

Devices

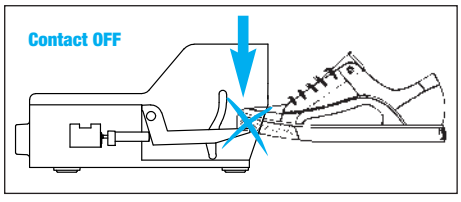
1: Free movement of the lever

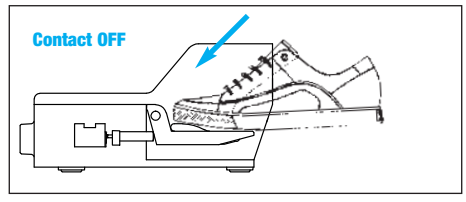


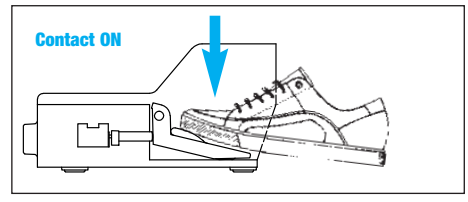


The lever can be actuated without any particular device.

2: Movement of the lever dependent of the safety device notch

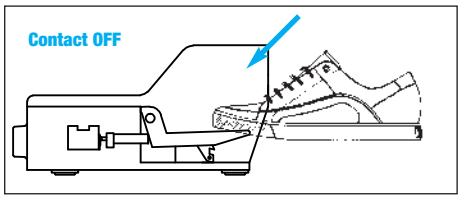


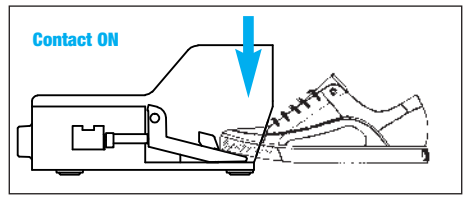


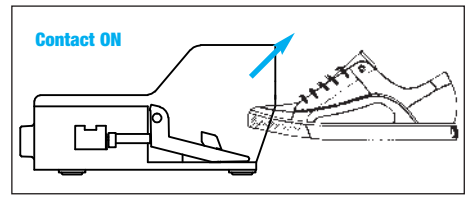


The pedal can be actuated only by lowering the safety lever fully inserting the foot, thus preventing any accidental actuation.

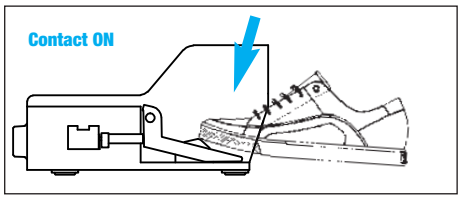
3: Device to maintain the lever in lowered position

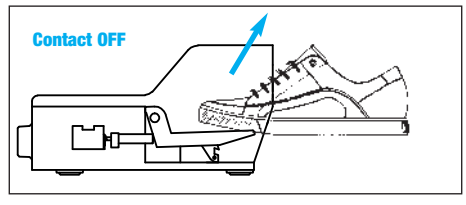






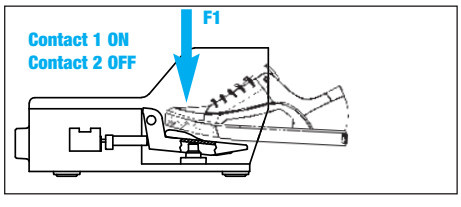
By pushing the lever the contact switches and the lever remains locked in lowered position.

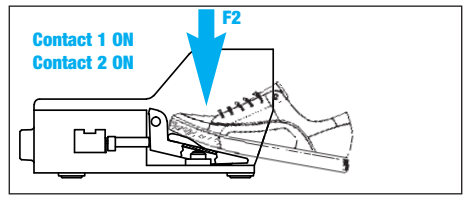




Push the locking device in order to unlock the pedal actuator.
Once you release the lever the contacts return to their initial position.

4: Free movement with two-stage actuating force





By applying a light pressure F1 on the lever, the first contact block will be actuated while the second keeps in state.
An higher pressure F2 on the lever will switch also the second contact block.

5: With safety device notch and two-stage actuating force

Same as above but the pedal can be actuated only by completely inserting the foot in the device.

PS... / PD... Foot Switches

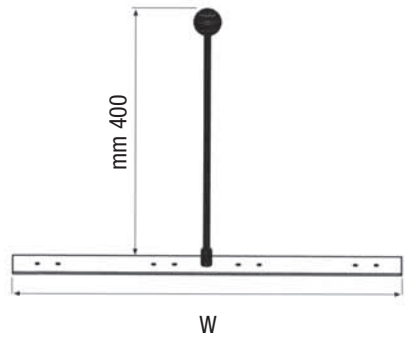
Double Insulation - Plastic Casing IP65

Accessories

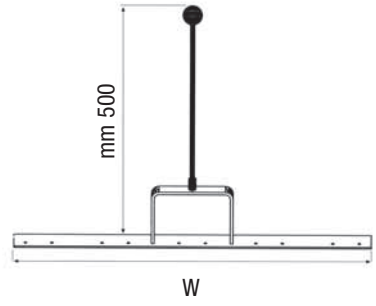
Carryng Rod Kits

Example of application

Type A



Type B

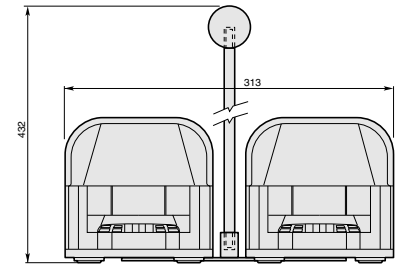


Order Code	Description	W (mm)	Type
PD1000	Max 2 Foot Switches*	350	A
PD1001	Max 3 Foot Switches*	520	B
PD1002	Max 4 Foot Switches*	700	A
PD1003	Max 5 Foot Switches*	850	B

** Foot Switches not included*

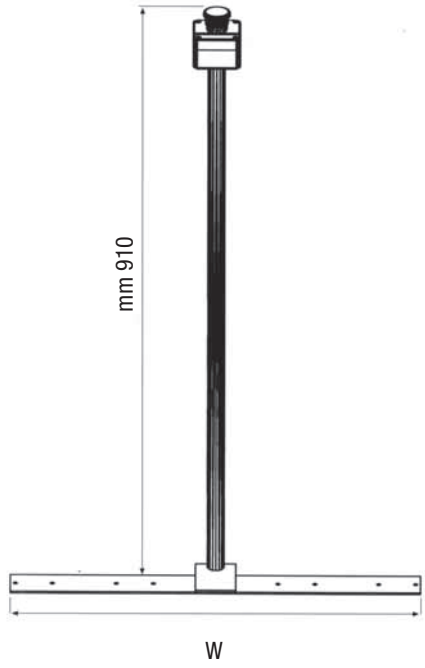
Note: Each carrying rod kit includes necessary fixing screws and cable glands for the specified number of foot switches.

Example of double foot switch application



Metal Steel Frame

Example of application



Order Code	Description	W (mm)
GR2025	For 1 Foot Switch only*	230
GR2026	Max 2 Foot Switches*	350
GR2027	Max 3 Foot Switches*	530
GR2028	Max 4 Foot Switches*	700

** Foot Switches not included*

Attention!
Push button and plastic box not included: please consult our "Control Units Ø22" catalog.

Note: Each carrying rod kit includes necessary fixing screws and cable glands for the specified number of foot switches.

MP... - Mini Foot Switches

Plastic Casing

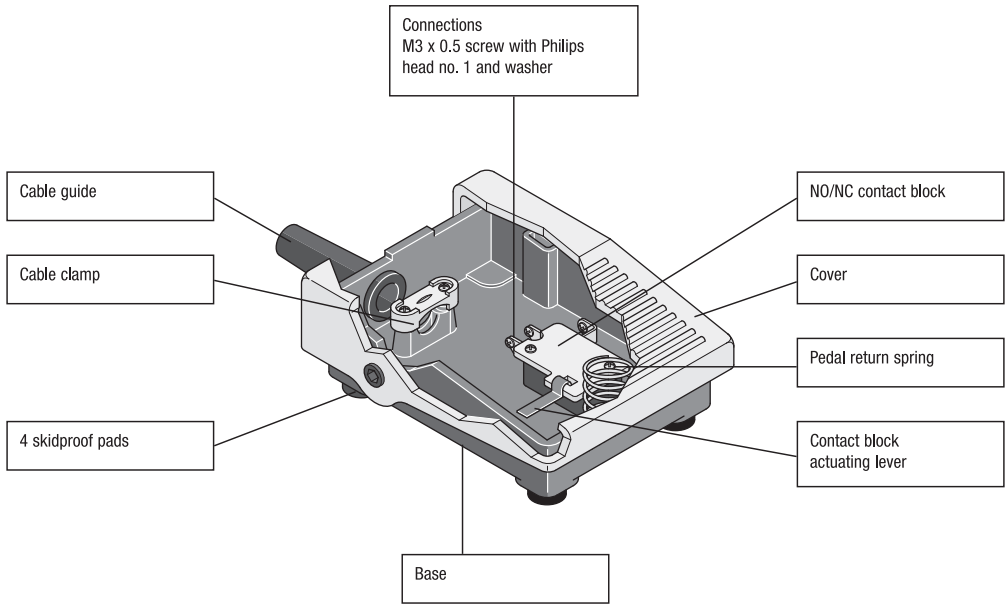
Description

Applications

Comepi foot switches of the MP series are plastic foot switches in mini design that besides their robust form and technical versatility are specially convincing for their functionality and ergonomic design. They can be applied on foot switch operated machines such as: shearing machines, spinning lathers, machine tools, wrapping machines, riveting presses, etc.

Description of MP6... Mini Foot Switches

- **Dimensions:** 100 x 75 x 34 mm.
- **Materials:** cover and base made of self-extinguishing ABS.
- **Colour choice:** black or grey base; black, grey, yellow or red cover.



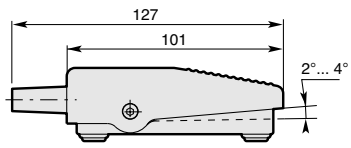
Symbols

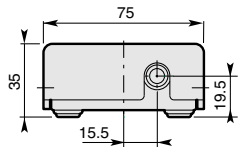
Example:	MP61	2	3
Structure:	MP61		

1 = Grey base
2 = Black base

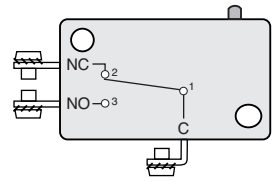
Cover colour
1 = Yellow / **2 =** Grey / **3 =** Black / **4 =** Red

Dimensions (in mm)





NO / NC Contact Block



• **Technical data** ..... page 88

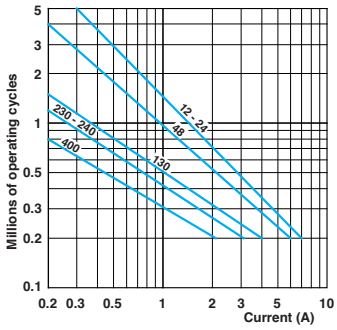
General Technical Data

			Mini Foot Switch	Foot Switch with Cover
Standards			IEC 1058-1	IEC 947-5-1
Certifications - Approvals			–	UL - CSA (upon request)
Air temperature near the device				
– during operation		°C	– 10 ... + 70	– 10 ... + 70
– for storage		°C	– 25 ... + 80	– 30 ... + 80
Climatic withstand			–	according to IEC 68-2-3 and salty mist according to IEC 68-2-11
Shock withstand (according to IEC 68-2-27 and EN 60 068-2-27)		g	–	50g (1/2 sinusoidal shock for 11 ms) no change in contact position
Degree of protection (according to IEC 529 and EN 60 529)			IP 40	IP 65
Operating Torque		N.m	1.2	0,25
Operating angle		Degree	2 to 4	15
Cable inlet			Cable guide ø 6 mm; ø max. 8.5	Pg 16

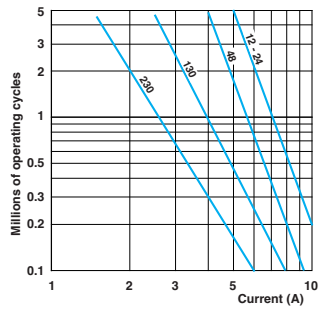
Electrical Data

			Mini Foot Switch	Foot Switch with Cover
Rated insulation voltage U_i		V	250	690 (according to IEC 947-1 and EN 60-947-1) Degree of pollution 3
Rated impulse withstand voltage U_{imp} (according to IEC 947-1 and EN 60 947-1)		kV	1	6
Conventional free air thermal current I_{th} $\theta < 40$ °C			15	10 (according to IEC 947-1)
Short-circuit protection $U_e < 500$ V a.c. - gG (gl) type fuses		A	10	10
Rated operational current		A	3 (250 V a.c.)	A 600 (according to UL 508 and CSA C22-2 n° 14)
		A	0.06 (230 V d.c.)	Q 600 (according to UL 508 and CSA C22-2 n° 14)
AC-15 (according to IEC 947-5-1)	24 V	A	–	10
	120 V	A	–	6
	230 V	A	–	3.1
	240 V	A	–	3
	400 V	A	–	1.8
DC-13 (according to IEC 947-5-1)	24 V	A	–	2.8
	125 V	A	–	0.55
	250 V	A	–	0.27
Resistance between contacts		mΩ	30	25
Connecting terminals			M3 x 0.5 screw with Philips head no. 1 and washer	M3.5 (+, –) pozidriv with cable clamp
Positive opening operation (according to IEC 947-5-1)			–	⊖
Connecting capacity	1 or 2 x mm^2		–	0.75 ... 2.5
Terminal marking			(Refer to contact block page 62)	According to EN 50 013
Mechanical durability	Millions of operations		10	30
Electrical durability	Operations		100 000	utilization categories AC-15 and DC-13 (Load factor of 0.5 according to curves below)

AC-15 - Snap action



AC-15 - Slow action



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

• **Ordering details** ..... page 84 to 87

Comepi all over the world

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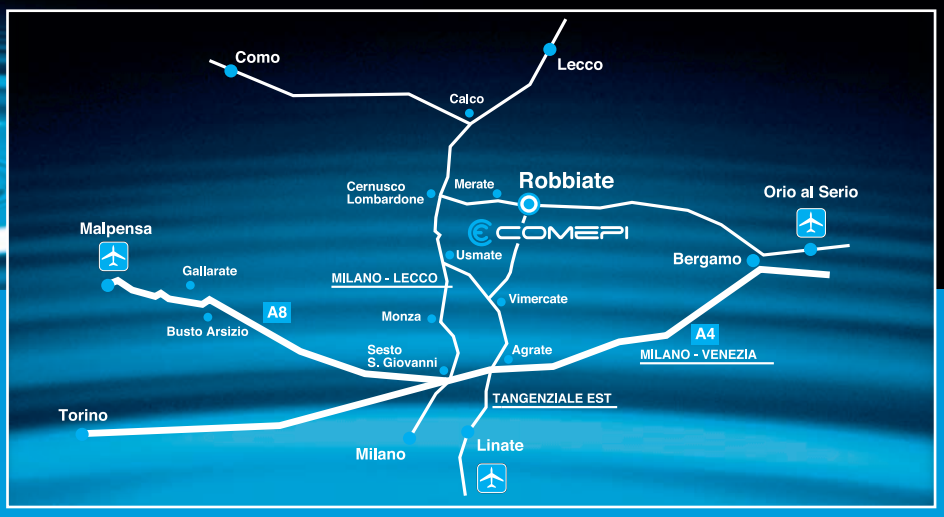
Iceland
Israel
Italy
Malta
The Netherlands
Poland
Portugal
Peru
Spain
United States
South Africa
Sweden
Turkey



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