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www.giovenzana.com

AUTOMATION • LIMIT & MICRO SWITCHES



GIOVENZANA
INTERNATIONAL B.V.



LIMIT SWITCHES
MICRO SWITCHES

GIOVENZANA INTERNATIONAL B.V.





QUALITY AS A LIFE STYLE

www.giovenzana.com



GIOVENZANA INTERNATIONAL B.V.: AUTOMATION TECHNOLOGIES

AUTOMATION

The solutions offered by **Giovenzana** are the results of the market analysis of industrial electrical accessories requirements in conformity with all relevant international standards. The range includes:

- Phoenix cam switches from 12A to 200A;
- Regolus switch disconnectors from 16A to 160A;
- Pegasus, Orion and NEMA auxiliary controls;
- Thermoplastic limit switches, with manual reset, safety limit switches, M12 & pre-wired thermoplastic limit switches;
- Foot switches and micro switches.

QUALITY

Giovenzana, leader in the elevator and lifting equipment field, has gained a prominent position in the automation sector with the launch of industrial control devices into the market. For many years, all commercial and industrial operations have been integrated within the **UNI EN ISO 9001:2015** quality system.

CSQ certificate N 9105. GIOV.

Quality system is the end users guarantee that all production stages are closely followed under strict control and adhere to the requirements set by the company both in terms of customer expectations and compliance to the relevant international standards as proved by the various certificates **Giovenzana** holds for its products.

By the **UNI EN ISO 14001:2015**, **Giovenzana** keeps up with new technologies in order to reduce raw materials consumption, energy and natural resources and to minimize waste and emissions. This reduces the environmental impact.

The certification CSQ N 9191. GIBV.

COMPLIANCE

All **Giovenzana** products are manufactured according to the most relevant Cee directives. **Giovenzana** certifies this compliance with a declaration of conformity.

CERTIFICATIONS

In order to reach its high quality level **Giovenzana's** products are tested by multiple third parties. In order to obtain the UL mark, **Giovenzana** submits their products to Underwriter Laboratories Inc., one of the most eminent independent certification companies in the World.

CEE DIRECTIVES

From January 1st, 1997 it is compulsory to CE mark all electromechanical products; this has been outlined by an important regulation: 2006/95/CE Low Voltage Directives.

CE MARK

European directives, applied to all national regulations, set the minimum requirements in term of safety of all electrical material sold within the EU.

Compliance to these requirements is certified by the manufacturer by the CE mark placed on the products.

STANDARDS

Giovenzana's products comply with both the European EN and the American UL standards. These regulations, such as CEI EN 60204-1 (CEI 44-5) with regards to the safety requirements of the electrical circuits on board industrial machinery, define the characteristics, performance and use of the products.

EN EUROPEAN STANDARDS

The EN European standards are originated from IEC International standards and are the result of the collaboration between CENELEC (European Committee for Electrotechnical Standardization) member countries.

These standards cover and eliminate existing national standards that may be contradictory and non-compliant.

PRODUCTS INDEX - LIMIT SWITCHES & MICRO SWITCHES

A **FTN SERIES** **THERMOPLASTIC LIMIT SWITCHES**

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FTN131



FTN132



FTN133



FTN134



FTN135



FTN136



FTN137



FTN138



FTN139



FTN140



FTN140L



FTN140R



FTN140RL



FTN141



FTN142



FTN143



FTN144



FTN198

B **FTN1R SERIES** **LIMIT SWITCHES WITH MANUAL RESET**

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FTN1R31



FTN1R32



FTN1R33



FTN1R34



FTN1R37



FTN1R38



FTN1R39



FTN1R40



FTN1R40R



FTN1R41



FTN1R43



FTN1R44

PRODUCTS INDEX - LIMIT SWITCHES & MICRO SWITCHES

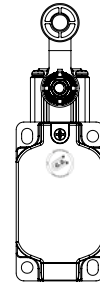
C FTNG SERIES 40 MM THERMOPLASTIC LIMIT SWITCHES pg. 43 / 53



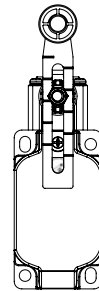
FTNG131



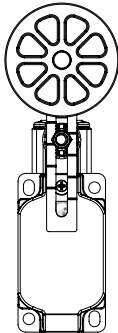
FTNG134



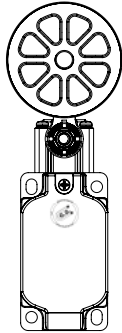
FTNG138



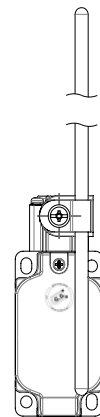
FTNG139



FTNG140



FTNG141



FTNG172

D STNK SERIES SAFETY LIMIT SWITCHES WITH KEY pg. 55 / 62



STNK01



STNK02



STNK03

E FCT SERIES M12 CONNECTION & PRE-WIRED THERMOPLASTIC LIMIT SWITCHES - IP67 pg. 63 / 73



01



02



03



04



05



06



07



08



09

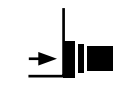


10



11

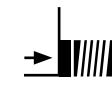
AVAILABLE VERSIONS



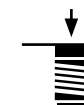
FCT2L...
with side cable input



FCT2V...
with vertical cable input



FCTML...
with side connector input



FCTMV...
with vertical connector input

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MFI



MFI.S



MFI.ST



MFI.STP



MFI.T



GIOVENZANA
INTERNATIONAL B.V.



THERMOPLASTIC LIMIT SWITCHES
FTN SERIES

A FTN SERIES THERMOPLASTIC LIMIT SWITCHES

DESCRIPTION



The **FTN series** thermoplastic limit switches, conform to EN 50047, have been developed to provide a range of options including a various choice of snap acting and slow acting and a wide range of actuator heads. The **FTN series** offers the option of rotating the head in 90° increments before installation to allow ease of mounting.

Giovenzana limit switches can be used in various applications in automation, lift and handling system fields. Operation of these limit switches is achieved by the sliding action of the guard or the moving object deflecting the plunger or lever. For safety applications it's important that upon actuation, the guard or other moving objects should not pass completely over the switch and allow the plunger or lever to return to its original position.

TECHNICAL DATA - HOUSING

Made of glass- reinforced polymer, self-extinguishing, shock-proof thermoplastic resin and with double insulation	
FTN Series one threaded conduit entry	Standard: M16
Protection degree	IP67 according to EN60529 with cable gland having equal or higher protection degree

GENERAL DATA

Positive opening operation	NC contact
Utilization category	AC15 B600, Snap Action AC15 B600
Minimum admissible current	5V, 5mA, DC
Insulation resistance	100MΩ min (DC 500V)
Contact resistance	25mΩ max (Initial)
Enclosure material	UL approved glass-filled polybutylene terephthalate
Operating temperature	Min -25°C (-18°F) / Max 80°C (+176°F)
Mechanical life expectancy	1x10 ⁷ cycles min
Electrically life expectancy	150.000 cycles min
Vibration resistance	IEC 68-2-6, 10-55Hz ± 1Hz, Excursion: 0.35mm, 1 octave/min
Conduit entry	Various
Fixing	2xM4

ELECTRICAL DATA

Rated thermal current (Ith)	10A
Rated insulation voltage (Ui)	600V AC
Rated impulse withstand voltage (Uimp)	2500V AC
Pollution degree	3
Protection against electric shock	Class II (Double insulation)

STANDARDS & APPROVALS

Standards	EN60947-5-1, UL508, EN50047
Approvals	cULus, EAC and CCC for all applicable directives

QUALITY MARKS



MAIN FEATURES

- Conforms to EN (TUV) standards corresponding to the CE marking.
- Positive opening operation of NC (Normally Closed) contacts conforming to IEC/EN 60947-5-1.
- Double insulation makes ground terminal unnecessary.
- Wide standard operating temperature range: -25°C to 80°C.
- Full range of actuator heads and levers suitable for safety applications.
- Sealing up to IP67.
- Wide switch variations (snap action and slow action basic switches).

ACCORDING TO STANDARDS

EN81.20 Safety contacts according to EN60947-5-1.
EN81.50 Protection degree higher than IP4x. Mechanical endurance higher than 1x10⁶ cycles.

INSTALLATION FOR SAFETY APPLICATIONS

Use only switches marked with the symbol . Always connect the safety circuit to the **NC contact** (normally closed contacts: 11-12 / 21-22 / 31-32) as required by **EN ISO 14119 paragraph 5.4** and as stated in the standard **EN81.20 paragraph 5.11.2.2.1**.



TAKE CARE!

If not expressly indicated in this chapter, for the correct installation and utilization of all articles see the instructions given on pages 92-93.

DATA TYPE APPROVED BY UL

Utilization categories:

FTN SERIES	Q300	A600	1 NC/1 NO Slow Action 2 NC Slow Action
		B600	1 NC/1 NO Snap Action
		A300	2 NC/1 NO Slow Action (3 poles) 3 NC Slow Action (3 poles)

Data of the housing type 1.
For all contact blocks use 60 or 75°C copper (Cu) conductor and wire size No. 14 - 18 AWG.
Terminal tightening torque of 7.1 lb in (0.8 Nm).
In conformity with standard: UL508, CSA 22.2 No. 14 - 10.

Please contact our technical service for the list of approved products.



PROTECTION CLASS

IP67 Designed to be used even in the most severe environmental situations, these devices pass the immersion test IP67 in conformity with EN 60529.

DOUBLE INSULATION

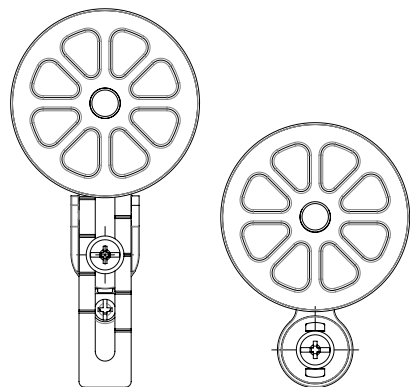
Materials of group II, according to IEC 536, are made with double insulation. This consists of doubling the insulation capability by means of an additional divider in order to eliminate any electrical shock risk and avoid the need for any additional protections.

POSITIVE OPENING



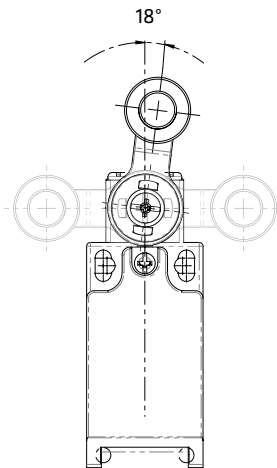
A limit switch complies to the specification when all the normally closed contact elements of the switch can be changed, with certainty, to the open position (no flexible link between the moving contacts and the operator of the switch, to which an actuating force is applied). Positive opening doesn't apply to NO contacts. Control switches with positive opening operation can be equipped with either slow-break or snap action contacts. In order to use different contacts on the same switch, it is necessary to electrically separate them; otherwise only one contact can be used. Every positive opening control switch must be marked on the external housing with the symbol on the left.

RUBBER ROLLERS



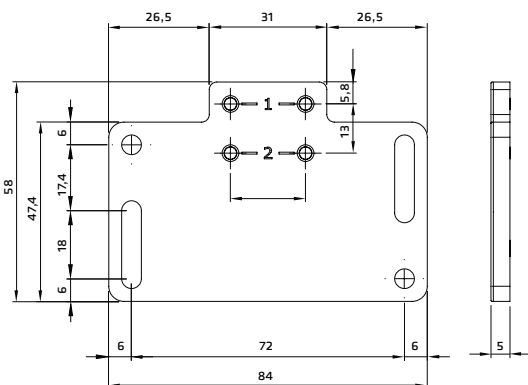
Different actuators with rubber rollers are available. The customer can choose the most suitable product depending on his needs. For example the lift speed in order to reduce the noise inside the cabin.

ADJUSTABLE LEVERS



In switches with revolving lever it is possible to adjust the lever with 18° steps for the whole 360° range. The positive movement transmission is always guaranteed thanks to the particular geometrical coupling between the lever and the revolving shaft.

ADAPTIVE PLATE

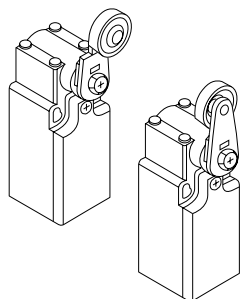


Fixing plate equipped with large slots for adjusting the operating point developed for backwards compatibility with old products. Each plate has a double pair of fixing holes.

The plate is sold in kit with **KIT-FTN** code.

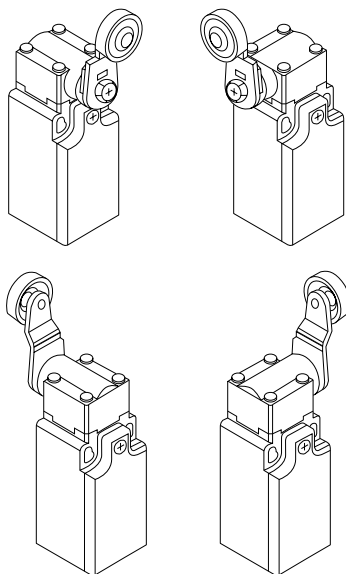
The **KIT-FTN** is inclusive of:
- 1 plate (code 12907009);
- 2 self-tapping screws 4x28 mm;
- 2 washers Ø4 mm.

OVERTURNING LEVERS



It's possible to fasten the lever on switches on straight or reverse side, maintaining the positive coupling. In this way it is possible to obtain two different work plans of the lever.

ROTATING HEADS



In all switches, it is possible to rotate the head in 90° steps.

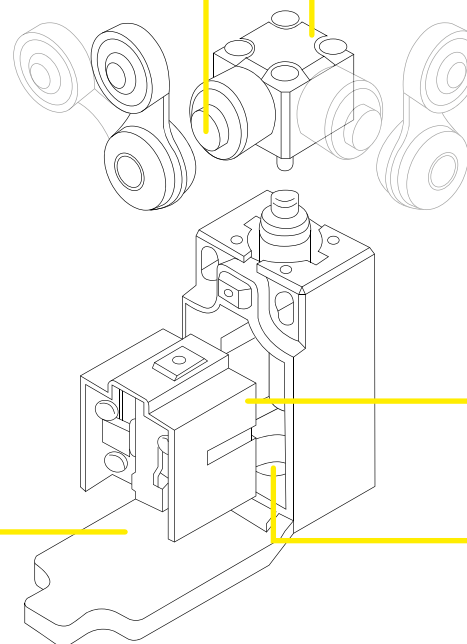
STRUCTURE DESCRIPTION

Metal Lever Setting

Grooves which engage the lever every 18° are cut in the operation indicator disk to prevent the lever from slipping against the rotary shaft.

Head

With roller lever models, the direction of the switch head can be varied to any of the four directions by loosening the roller lever switch screws at the four corners of the head.



Contact block

Snap action:
1NC/1NO
Slow action:
1NC/1NO, 2NC, 2NC/1NO, 3NC

Cover

The cover, with a hinge on its lower part, can be opened by removing the screw of the cover, which ensures ease of maintenance and wiring.

Conduit Entry

Standard: M16.
On request: M20, 1/2NPT, PG11, PG13.5.

PRODUCT SELECTION

FTN	1	31	X11	M
Series	Function	Head and actuators	Contact Types	Thread dimension of lead exit
	1 - Without Reset Function	31 - Short plastic end plunger with protective boot 32 - PA Roller lever plunger with protective boot horizontal action 33 - PA Roller lever plunger with protective boot vertical action 34 - PA Roller lever plunger 35 - Spring lever with tip in PA 36 - CAT'S Whisker 37 - Rod lever type 38 - Ø18 PA Roller lever 39 - Variable length roller lever Ø18 40 - Variable length rubber roller lever Ø50 40L - Variable length and long rubber roller lever Ø50 40R - Variable length and rubber roller lever Ø50 40RL - Variable length and long rubber roller lever Ø50 41 - Ø50 Rubber roller lever 42 - Wobble stick 43 - Metal roller short lever Ø18 44 - Variable length roller lever Ø18 98 - Rope pull lever	X11 - 1NC/1NO Slow Action W02 - 2NC Slow Action Z11 - 1NC/1NO Snap Action W12 - 2NC/1NO Slow Action W03 - 3NC Slow Action Slow Action & Snap Action: Type "Zb"	Standard: BLANK - M16 On request: M - M20 N - 1/2NPT G1 - PG11 G3 - PG13.5 C - Connector

CONTACT BLOCK FORM

Contact Types	X11	W02	Z11	W12	W03
Contact Form	1NC/1NO Slow Action	2NC Slow Action	1NC/1NO Snap Action	2NC/1NO Slow Action	3NC Slow Action
Electrical Schemes					
Connector pin Arrangement				No Connector type	

M12 Connector pin arrangement - on request

POSITIVE OPEN MECHANISM

1NC/NO Contact (Snap action)

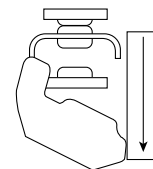
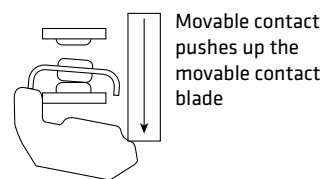
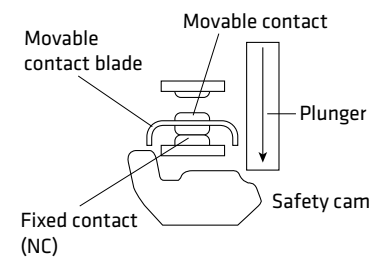
Conforms to EN60947-5-1 Positive Opening

If metal deposition between mating contacts occurs on the NC contact side, they can be pulled apart by the shearing force and tensile force generated when the safety cam or plunger engages the movable contact blade. When the safety cam or plunger is moved in the direction of the black arrow the Limit Switch releases.

1. When metal deposition occurs.

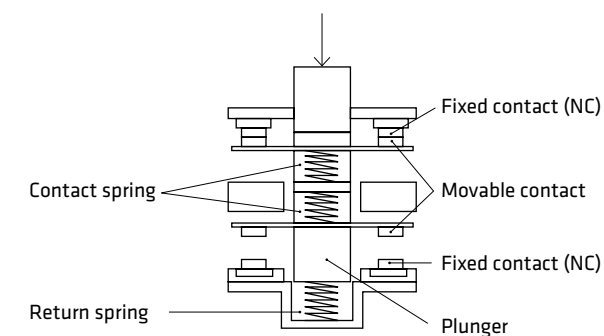
2. When contacts are being pulled apart.

3. When contacts are completely pulled apart.



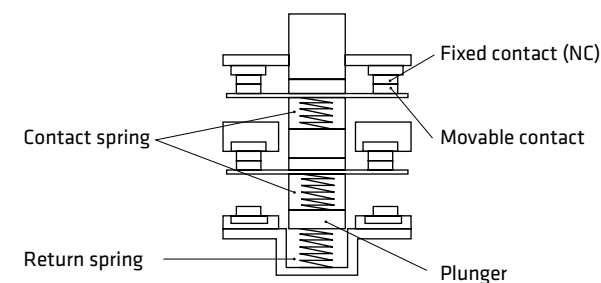
1NC/NO Contact (Slow action)

Only the NC contacts have a positive opening function. When metal deposition occurs, the contacts are separated from each other by pushing in the plunger.

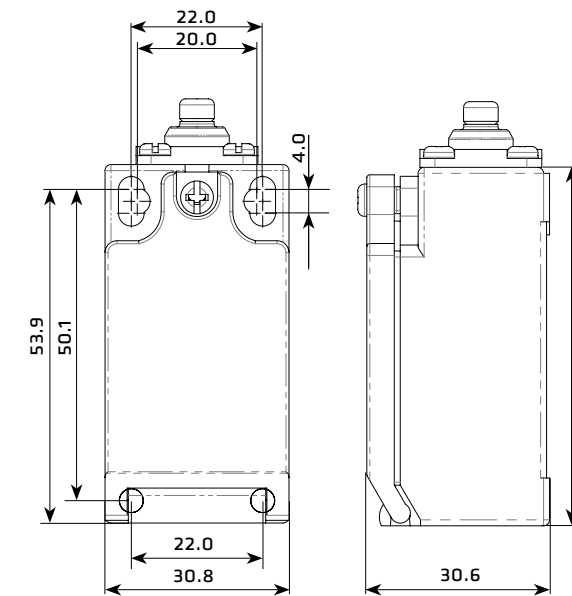


2NC Contact (Slow action)

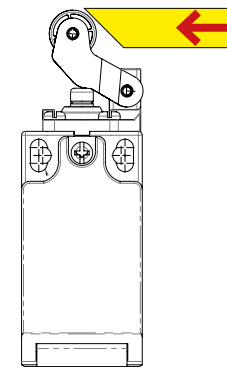
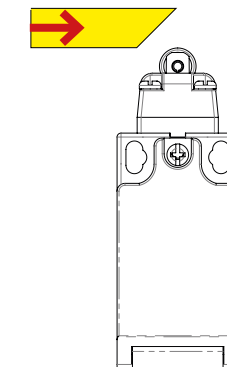
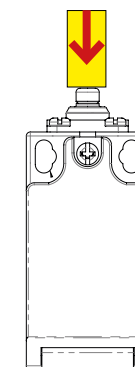
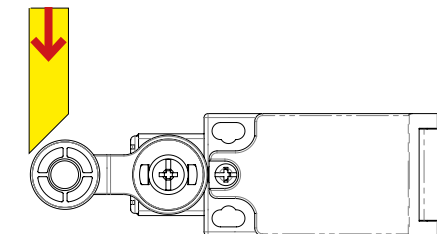
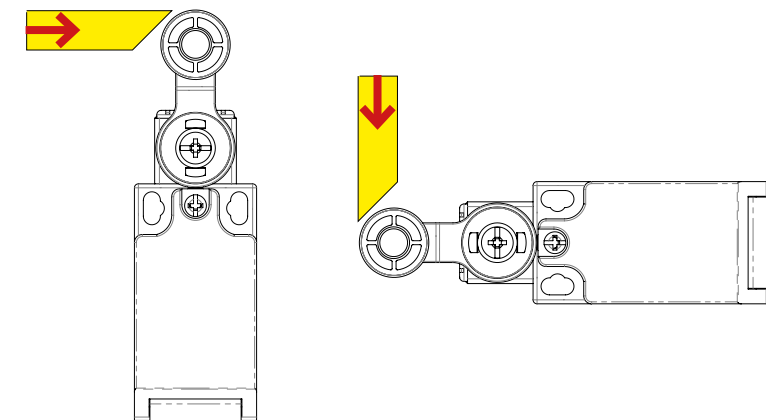
Both NC contacts incorporate a positive opening function. When metal deposition occurs, the contacts are separated from each other by pushing in the plunger.



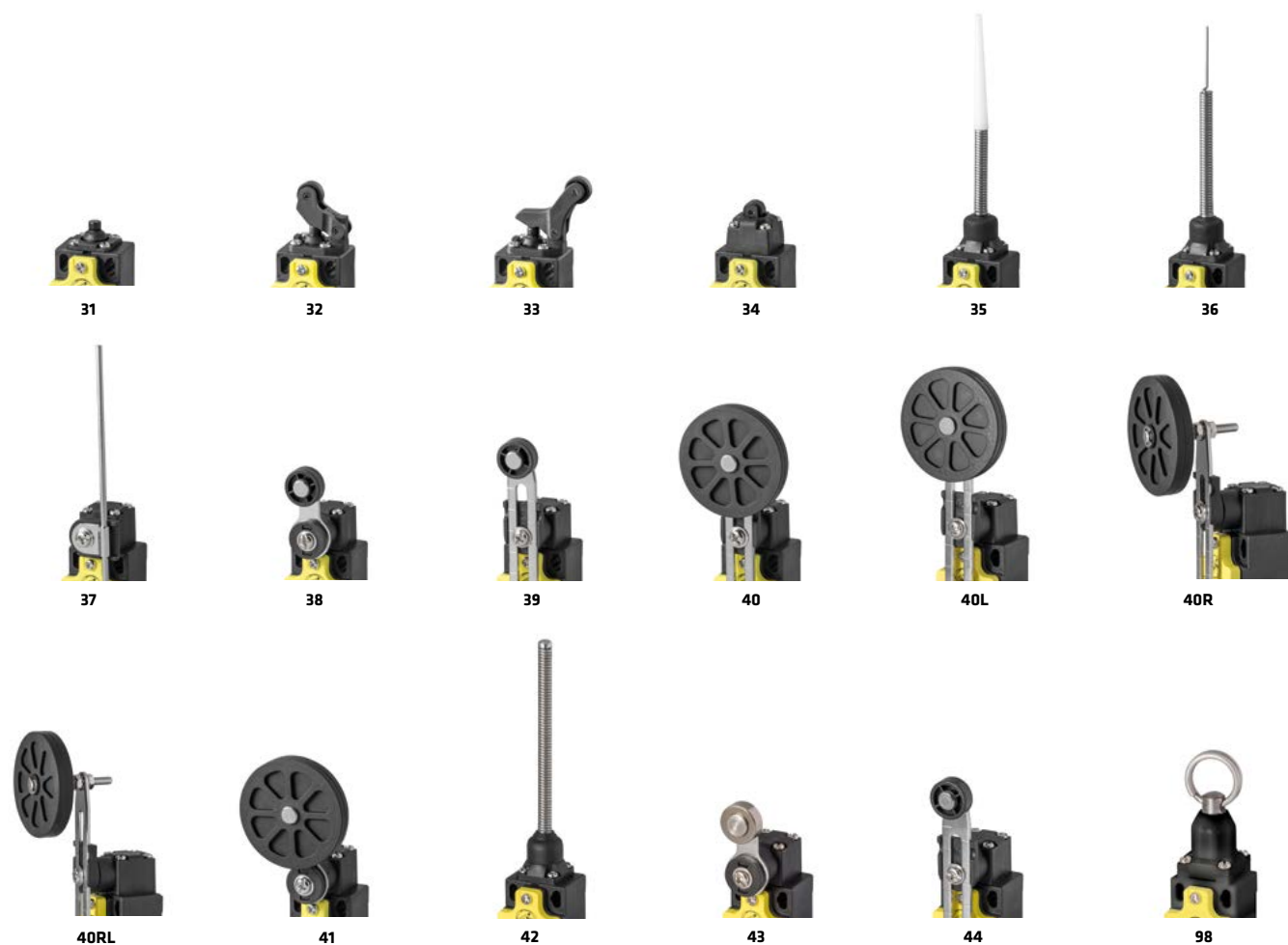
DIMENSIONS



OPERATING EXAMPLES



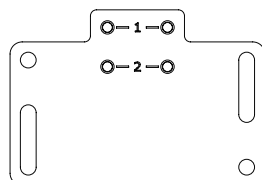
SELECTION DIAGRAM FTN SERIES



X11 - 1NC/1NO Slow Action
W02 - 2NC Slow Action
Z11 - 1NC/1NO Snap Action
W12 - 2NC/1NO Slow Action
W03 - 3NC Slow Action

Accessory
sell separately

KIT-FTN is inclusive of:
- 1 plate (code 12907009);
- 2 self-tapping screws
4x28 mm;
- 2 washers Ø4 mm.



Threaded conduit entry

Standard:
BLANK - M16
On request:
M - M20
N - 1/2NPT
G1 - PG11
G3 - PG13.5
C - Connector

Wiring

Customized
wirings are available
on request, with
connectors and
cables in accordance
with customers'
specifications.

CONTACT BLOCKS

ADAPTIVE PLATE

CONDUIT ENTRY

ACTUATORS

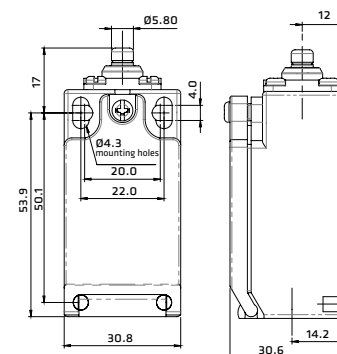
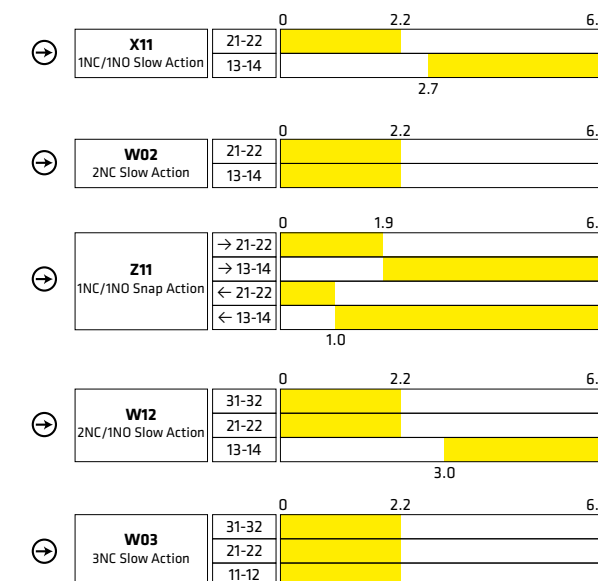
FTN SERIES



FTN131: Short plastic end plunger with protective boot

FTN	1	31	X11	M
Series	Function	Head and actuators	Contact Types	Thread dimension of lead exit
	1 - Without Reset Function	31 - Short plastic end plunger with protective boot	X11 - 1NC/1NO Slow Action W02 - 2NC Slow Action Z11 - 1NC/1NO Snap Action W12 - 2NC/1NO Slow Action W03 - 3NC Slow Action Slow Action & Snap Action: Type "Zb"	Standard: BLANK - M16 On request: M - M20 N - 1/2NPT G1 - PG11 G3 - PG13.5 C - Connector

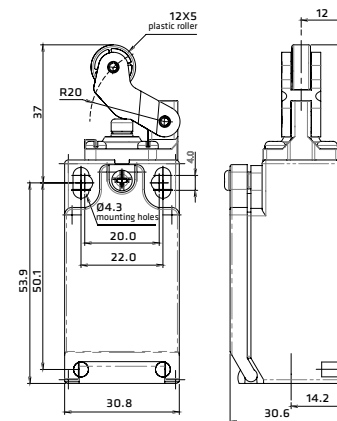
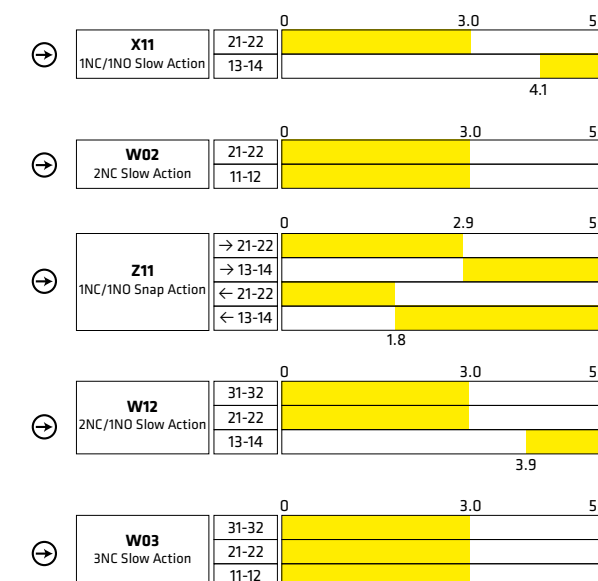
OPERATION DIAGRAMS



FTN132: PA Roller lever plunger with protective boot horizontal action

FTN	1	32	X11	M
Series	Function	Head and actuators	Contact Types	Thread dimension of lead exit
	1 - Without Reset Function	32 - PA Roller lever plunger with protective boot horizontal action	X11 - 1NC/1NO Slow Action W02 - 2NC Slow Action Z11 - 1NC/1NO Snap Action W12 - 2NC/1NO Slow Action W03 - 3NC Slow Action Slow Action & Snap Action: Type "Zb"	Standard: BLANK - M16 On request: M - M20 N - 1/2NPT G1 - PG11 G3 - PG13.5 C - Connector

OPERATION DIAGRAMS

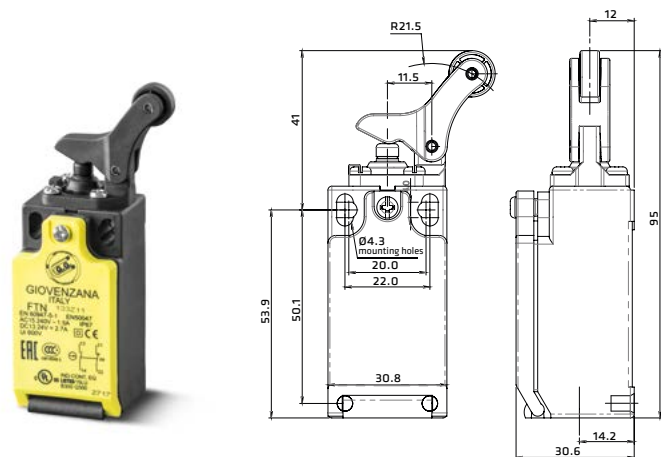


FTN133: PA Roller lever plunger with protective boot vertical action

FTN	1	33	X11	M
Series	Function	Head and actuators	Contact Types	Thread dimension of lead exit
	1 - Without Reset Function	33 - PA Roller lever plunger with protective boot vertical action	X11 - 1NC/1NO Slow Action W02 - 2NC Slow Action Z11 - 1NC/1NO Snap Action W12 - 2NC/1NO Slow Action W03 - 3NC Slow Action Slow Action & Snap Action: Type "Zb"	Standard: BLANK - M16 On request: M - M20 N - 1/2NPT G1 - PG11 G3 - PG13.5 C - Connector

OPERATION DIAGRAMS

⊕	X11 1NC/1NO Slow Action	21-22 13-14	0 4.0 9.8
⊕	W02 2NC Slow Action	21-22 11-12	0 4.0 9.8
⊕	Z11 1NC/1NO Snap Action	→ 21-22 → 13-14 ← 21-22 ← 13-14	0 3.6 9.8 2.5
⊕	W12 2NC/1NO Slow Action	31-32 21-22 13-14	0 4.0 9.8 4.7
⊕	W03 3NC Slow Action	31-32 21-22 11-12	0 4.0 9.8

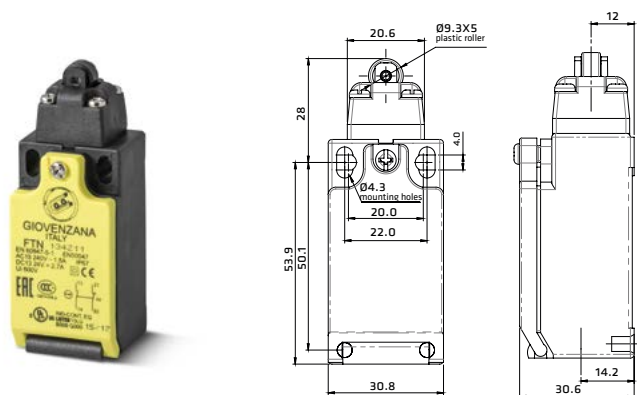


FTN134: PA Roller lever plunger

FTN	1	34	X11	M
Series	Function	Head and actuators	Contact Types	Thread dimension of lead exit
	1 - Without Reset Function	34 - PA Roller lever plunger	X11 - 1NC/1NO Slow Action W02 - 2NC Slow Action Z11 - 1NC/1NO Snap Action W12 - 2NC/1NO Slow Action W03 - 3NC Slow Action Slow Action & Snap Action: Type "Zb"	Standard: BLANK - M16 On request: M - M20 N - 1/2NPT G1 - PG11 G3 - PG13.5 C - Connector

OPERATION DIAGRAMS

⊕	X11 1NC/1NO Slow Action	21-22 13-14	0 2.2 6.0 2.7
⊕	W02 2NC Slow Action	21-22 11-12	0 2.2 6.0
⊕	Z11 1NC/1NO Snap Action	→ 21-22 → 13-14 ← 21-22 ← 13-14	0 1.9 6.0 1.0
⊕	W12 2NC/1NO Slow Action	31-32 21-22 13-14	0 2.2 6.0 3.0
⊕	W03 3NC Slow Action	31-32 21-22 11-12	0 2.2 6.0

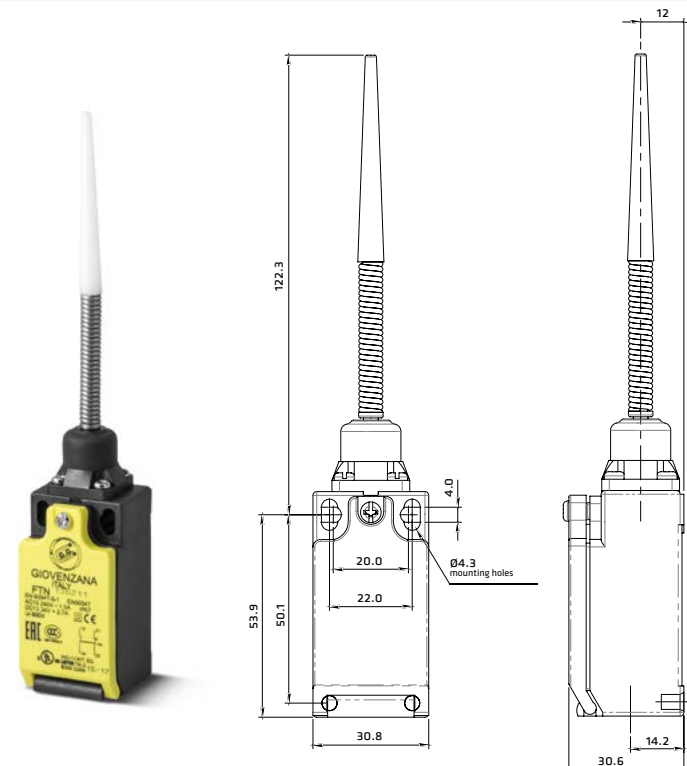


FTN135: Spring lever with tip in PA

FTN	1	35	X11	M
Series	Function	Head and actuators	Contact Types	Thread dimension of lead exit
	1 - Without Reset Function	35 - Spring lever with tip in PA	X11 - 1NC/1NO Slow Action W02 - 2NC Slow Action Z11 - 1NC/1NO Snap Action W12 - 2NC/1NO Slow Action W03 - 3NC Slow Action Slow Action & Snap Action: Type "Zb"	Standard: BLANK - M16 On request: M - M20 N - 1/2NPT G1 - PG11 G3 - PG13.5 C - Connector

OPERATION DIAGRAMS

⊕	X11 1NC/1NO Slow Action	21-22 13-14	0 12° 0 12° 20° 20°
⊕	W02 2NC Slow Action	11-12 21-22	0 12° 0 12°
⊕	Z11 1NC/1NO Snap Action	→ 21-22 → 13-14 ← 21-22 ← 13-14	0 12° 0 12° 5° 5°
⊕	W12 2NC/1NO Slow Action	13-14 21-22 31-32	0 12° 0 12° 20° 20°
⊕	W03 3NC Slow Action	11-12 21-22 31-32	0 12° 0 12°

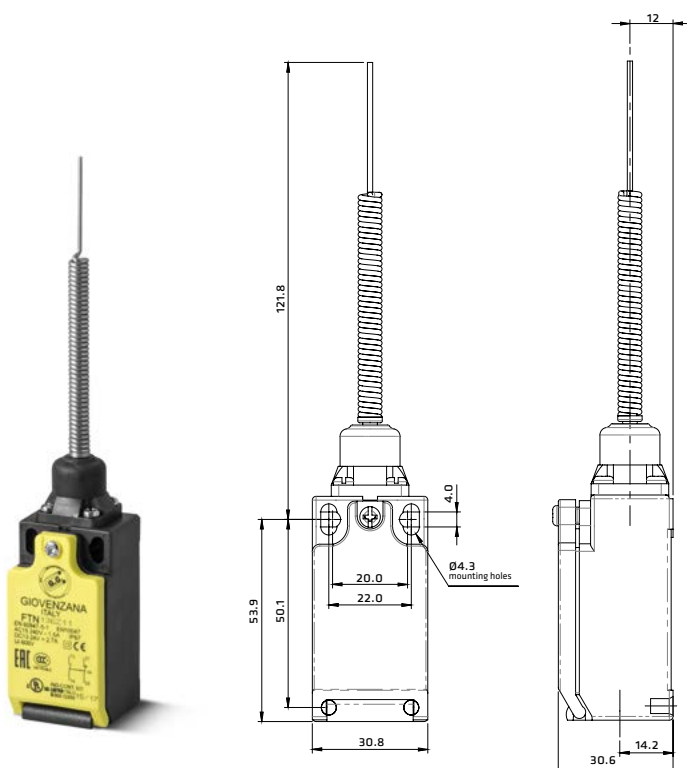


FTN136: CAT'S Whisker

FTN	1	36	X11	M
Series	Function	Head and actuators	Contact Types	Thread dimension of lead exit
	1 - Without Reset Function	36 - CAT'S Whisker	X11 - 1NC/1NO Slow Action W02 - 2NC Slow Action Z11 - 1NC/1NO Snap Action W12 - 2NC/1NO Slow Action W03 - 3NC Slow Action Slow Action & Snap Action: Type "Zb"	Standard: BLANK - M16 On request: M - M20 N - 1/2NPT G1 - PG11 G3 - PG13.5 C - Connector

OPERATION DIAGRAMS

⊕	X11 1NC/1NO Slow Action	21-22 13-14	0 12° 0 12° 20° 20°
⊕	W02 2NC Slow Action	21-22 11-12	0 12° 0 12°
⊕	Z11 1NC/1NO Snap Action	→ 21-22 → 13-14 ← 21-22 ← 13-14	0 12° 0 12° 5° 5°
⊕	W12 2NC/1NO Slow Action	31-32 21-22 13-14	0 12° 0 12° 20° 20°
⊕	W03 3NC Slow Action	31-32 21-22 11-12	0 12° 0 12°



FTN137: Rod lever type

FTN	1	37	X11	M
Series	Function	Head and actuators	Contact Types	Thread dimension of lead exit
	1 - Without Reset Function	37 - Rod lever type	X11 - 1NC/1NO Slow Action W02 - 2NC Slow Action Z11 - 1NC/1NO Snap Action W12 - 2NC/1NO Slow Action W03 - 3NC Slow Action Slow Action & Snap Action: Type "Zb"	Standard: BLANK - M16 On request: M - M20 N - 1/2NPT G1 - PG11 G3 - PG13.5 C - Connector

OPERATION DIAGRAMS

⊕	X11 1NC/1NO Slow Action	21-22 13-14	80° 30° 0 30° 80°	40° 40°
⊕	W02 2NC Slow Action	21-22 11-12	80° 30° 0 30° 80°	
⊕	Z11 1NC/1NO Snap Action	→ 21-22 → 13-14 ← 21-22 ← 13-14	80° 28° 0 28° 80°	11° 11°
⊕	W12 2NC/1NO Slow Action	31-32 21-22 13-14	80° 30° 0 30° 80°	40° 40°
⊕	W03 3NC Slow Action	31-32 21-22 11-12	80° 30° 0 30° 80°	

FTN138: Ø18 PA Roller lever

FTN	1	38	X11	M
Series	Function	Head and actuators	Contact Types	Thread dimension of lead exit
	1 - Without Reset Function	38 - Ø18 PA Roller lever	X11 - 1NC/1NO Slow Action W02 - 2NC Slow Action Z11 - 1NC/1NO Snap Action W12 - 2NC/1NO Slow Action W03 - 3NC Slow Action Slow Action & Snap Action: Type "Zb"	Standard: BLANK - M16 On request: M - M20 N - 1/2NPT G1 - PG11 G3 - PG13.5 C - Connector

OPERATION DIAGRAMS

⊕	X11 1NC/1NO Slow Action	21-22 13-14	80° 30° 0 30° 80°	40° 40°
⊕	W02 2NC Slow Action	21-22 11-12	80° 30° 0 30° 80°	
⊕	Z11 1NC/1NO Snap Action	→ 21-22 → 13-14 ← 21-22 ← 13-14	80° 28° 0 28° 80°	11° 11°
⊕	W12 2NC/1NO Slow Action	31-32 21-22 13-14	80° 30° 0 30° 80°	40° 40°
⊕	W03 3NC Slow Action	31-32 21-22 11-12	80° 30° 0 30° 80°	

FTN139: Variable lenght roller lever Ø18

FTN	1	39	X11	M
Series	Function	Head and actuators	Contact Types	Thread dimension of lead exit
	1 - Without Reset Function	39 - Variable lenght roller lever Ø18	X11 - 1NC/1NO Slow Action W02 - 2NC Slow Action Z11 - 1NC/1NO Snap Action W12 - 2NC/1NO Slow Action W03 - 3NC Slow Action Slow Action & Snap Action: Type "Zb"	Standard: BLANK - M16 On request: M - M20 N - 1/2NPT G1 - PG11 G3 - PG13.5 C - Connector

OPERATION DIAGRAMS

⊕	X11 1NC/1NO Slow Action	21-22 13-14	80° 30° 0 30° 80°	40° 40°
⊕	W02 2NC Slow Action	21-22 11-12	80° 30° 0 30° 80°	
⊕	Z11 1NC/1NO Snap Action	→ 21-22 → 13-14 ← 21-22 ← 13-14	80° 28° 0 28° 80°	11° 11°
⊕	W12 2NC/1NO Slow Action	31-32 21-22 13-14	80° 30° 0 30° 80°	40° 40°
⊕	W03 3NC Slow Action	31-32 21-22 11-12	80° 30° 0 30° 80°	

FTN140: Variable lenght rubber roller lever Ø50

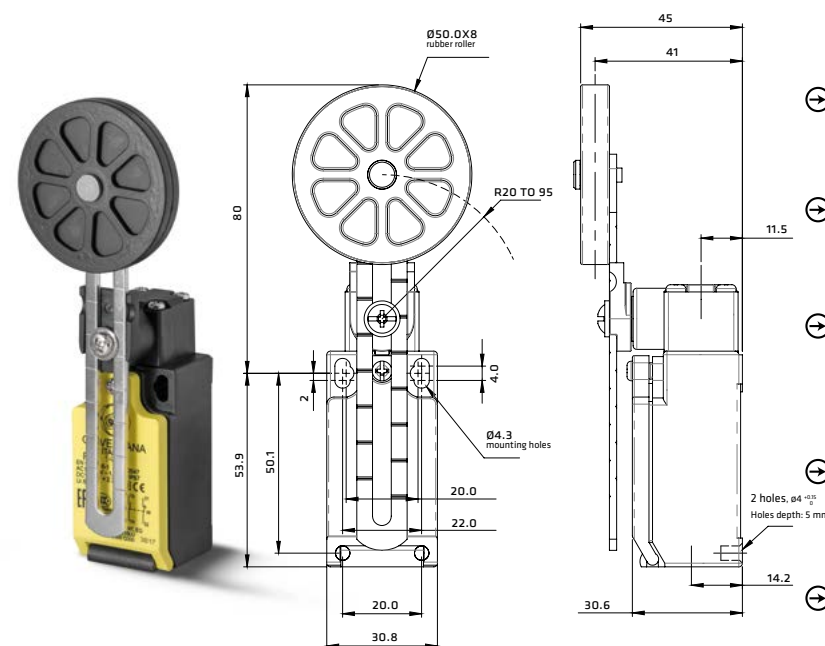
FTN	1	40	X11	M
Series	Function	Head and actuators	Contact Types	Thread dimension of lead exit
	1 - Without Reset Function	40 - Variable lenght rubber roller lever Ø50	X11 - 1NC/1NO Slow Action W02 - 2NC Slow Action Z11 - 1NC/1NO Snap Action W12 - 2NC/1NO Slow Action W03 - 3NC Slow Action Slow Action & Snap Action: Type "Zb"	Standard: BLANK - M16 On request: M - M20 N - 1/2NPT G1 - PG11 G3 - PG13.5 C - Connector

OPERATION DIAGRAMS

⊕	X11 1NC/1NO Slow Action	21-22 13-14	80° 30° 0 30° 80°	40° 40°
⊕	W02 2NC Slow Action	21-22 11-12	80° 30° 0 30° 80°	
⊕	Z11 1NC/1NO Snap Action	→ 21-22 → 13-14 ← 21-22 ← 13-14	80° 28° 0 28° 80°	11° 11°
⊕	W12 2NC/1NO Slow Action	31-32 21-22 13-14	80° 30° 0 30° 80°	40° 40°
⊕	W03 3NC Slow Action	31-32 21-22 11-12	80° 30° 0 30° 80°	

FTN140L: Variable lenght rubber roller lever Ø50 (Long Arm)

FTN	1	40L	X11	M
Series	Function	Head and actuators	Contact Types	Thread dimension of lead exit
	1 - Without Reset Function	40L - Variable lenght rubber roller lever Ø50 (Long Arm)	X11 - 1NC/1NO Slow Action W02 - 2NC Slow Action Z11 - 1NC/1NO Snap Action W12 - 2NC/1NO Slow Action W03 - 3NC Slow Action Slow Action & Snap Action: Type "Zb"	Standard: BLANK - M16 On request: M - M20 N - 1/2NPT G1 - PG11 G3 - PG13.5 C - Connector



OPERATION DIAGRAMS

Diagram 1: X11 1NC/1NO Slow Action

Side View Dimensions: 80° LT43.5° 28°_32° 0 28°_32° LT43.5° 80°

Top View Dimensions: 38°_42° 38°_42°

Diagram 2: W02 2NC Slow Action

Side View Dimensions: 80° LT43.5° 28°_32° 0 28°_32° LT43.5° 80°

Top View Dimensions: 38°_42° 38°_42°

Diagram 3: Z11 1NC/1NO Snap Action

Side View Dimensions: 80° LT43.5° 25°_28° 0 25°_28° LT43.5° 80°

Top View Dimensions: 11°_14° 11°_14°

Diagram 4: W12 2NC/1NO Slow Action

Side View Dimensions: 80° LT43.5° 28°_32° 0 28°_32° LT43.5° 80°

Top View Dimensions: 38°_42° 3.4 38°_42°

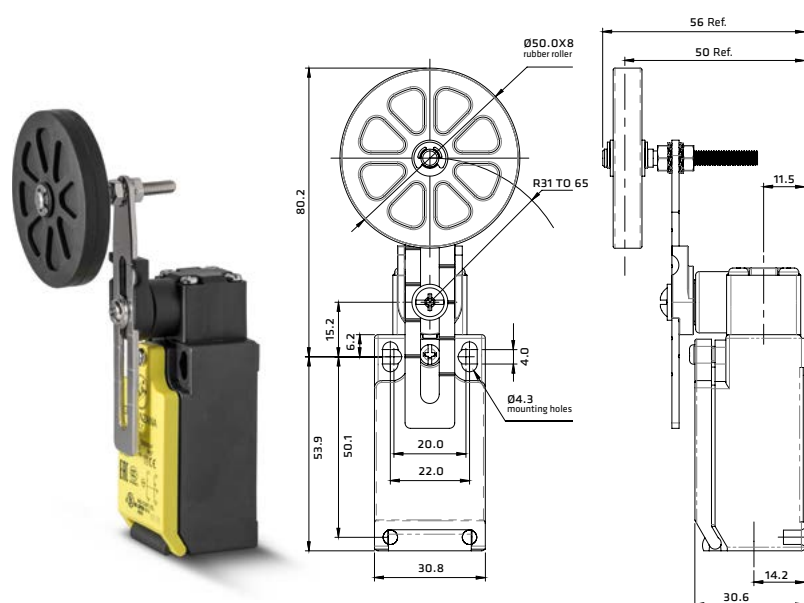
Diagram 5: W03 3NC Slow Action

Side View Dimensions: 80° LT43.5° 28°_32° 0 28°_32° LT43.5° 80°

Top View Dimensions: 38°_42° 38°_42°

FTN140R: Variable lenght and rubber roller lever Ø50

FTN	1	40R	X11	M
Series	Function	Head and actuators	Contact Types	Thread dimension of lead exit
	1 - Without Reset Function	40R - Variable lenght and rubber roller lever Ø50	X11 - 1NC/1NO Slow Action W02 - 2NC Slow Action Z11 - 1NC/1NO Snap Action W12 - 2NC/1NO Slow Action W03 - 3NC Slow Action Slow Action & Snap Action: Type "Zb"	Standard: BLANK - M16 On request: M - M20 N - 1/2NPT G1 - PG11 G3 - PG13.5 C - Connector



OPERATION DIAGRAMS

X11
1NC/1NO Slow Action

80° 30° 0 30° 80°

21-22
13-14

40° 40°

W02
2NC Slow Action

80° 30° 0 30° 80°

21-22
11-12

Z11
1NC/1NO Snap Action

80° 28° 0 28° 80°

→ 21-22
→ 13-14
← 21-22
← 13-14

11° 11°

W12
2NC/1NO Slow Action

80° 30° 0 30° 80°

31-32
21-22
13-14

40° 40°

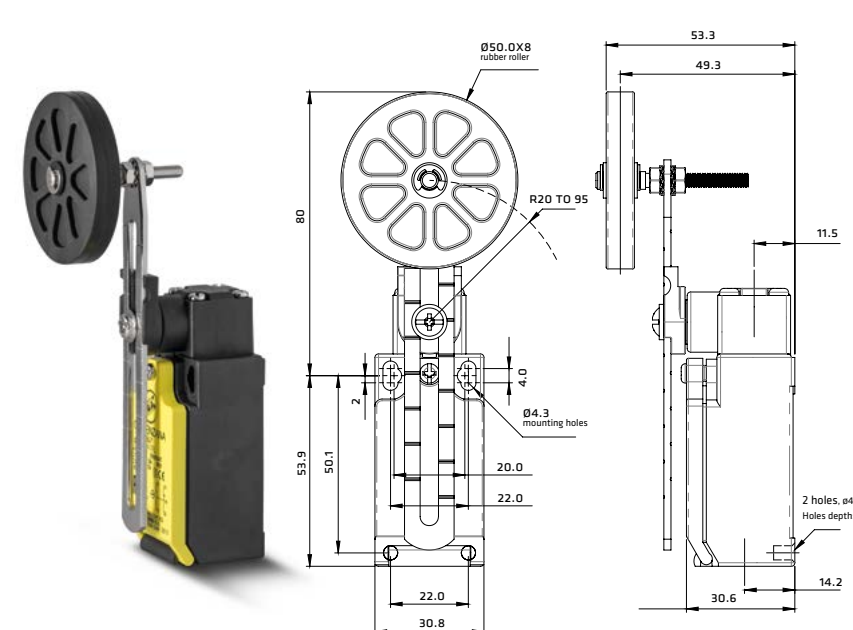
W03
3NC Slow Action

80° 30° 0 30° 80°

31-32
21-22
11-12

FTN140RL: Variable lenght and rubber roller lever Ø50 (Long Arm)

FTN	1	40RL	X11	M
Series	Function	Head and actuators	Contact Types	Thread dimension of lead exit
	1 - Without Reset Function	40RL - Variable lenght and rubber roller lever Ø50 (Long Arm)	X11 - 1NC/1NO Slow Action W02 - 2NC Slow Action Z11 - 1NC/1NO Snap Action W12 - 2NC/1NO Slow Action W03 - 3NC Slow Action Slow Action & Snap Action: Type "Zb"	Standard: BLANK - M16 On request: M - M20 N - 1/2NPT G1 - PG11 G3 - PG13.5 C - Connector



OPERATION DIAGRAMS

Figure 10: Sizing charts for various valves.

Valve X11: 1NC/1NO Slow Action

ΔP (bar)	1NC/1NO Slow Action	2NC	3NC
80° LT43.5° 28°_32° 0 28°_32° LT43.5° 8	21-22		
38°_42°	13-14		

Valve W02: 2NC Slow Action

ΔP (bar)	2NC Slow Action	1NC/1NO	3NC
80° LT43.5° 28°_32° 0 28°_32° LT43.5° 8	21-22		
38°_42°	11-12		

Valve Z11: 1NC/1NO Snap Action

ΔP (bar)	1NC/1NO Snap Action	2NC	3NC
80° LT43.5° 25°_28° 0 25°_28° LT43.5° 8	→ 21-22		
→ 13-14			
← 21-22			
← 13-14			

Valve W12: 2NC/1NO Slow Action

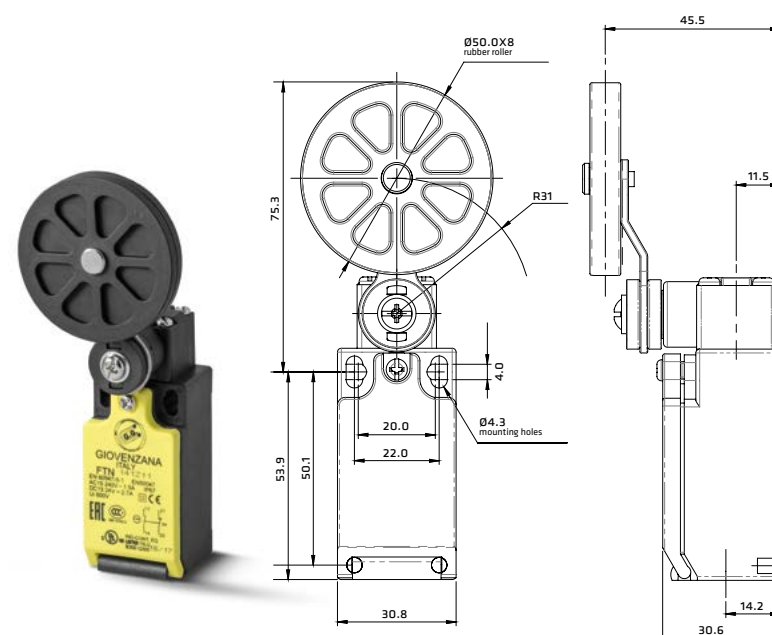
ΔP (bar)	2NC/1NO Slow Action	1NC/1NO	3NC
80° LT43.5° 28°_32° 0 28°_32° LT43.5° 8	31-32		
21-22			
13-14			

Valve W03: 3NC Slow Action

ΔP (bar)	3NC Slow Action	1NC/1NO	2NC
80° LT43.5° 28°_32° 0 28°_32° LT43.5° 8	31-32		
21-22			
11-12			

FTN141: Ø50 Rubber roller lever

FTN	1	41	X11	M
Series	Function	Head and actuators	Contact Types	Thread dimension of lead exit
	1 - Without Reset Function	41 - Ø50 Rubber roller lever	X11 - 1NC/1NO Slow Action W02 - 2NC Slow Action Z11 - 1NC/1NO Snap Action W12 - 2NC/1NO Slow Action W03 - 3NC Slow Action Slow Action & Snap Action: Type "Zb"	Standard: BLANK - M16 On request: M - M20 N - 1/2NPT G1 - PG11 G3 - PG13.5 C - Connector



OPERATION DIAGRAMS

X11
1NC/1NO Slow Action

21-22	80°	30°	0	30°	80°
13-14					

40° 40°

W02
2NC Slow Action

21-22	80°	30°	0	30°	80°
11-12					

Z11
1NC/1NO Snap Action

→ 21-22	80°	28°	0	28°	80°
→ 13-14					
← 21-22					
← 13-14					

11° 11°

W12
2NC/1NO Slow Action

31-32	80°	30°	0	30°	80°
21-22					
13-14					


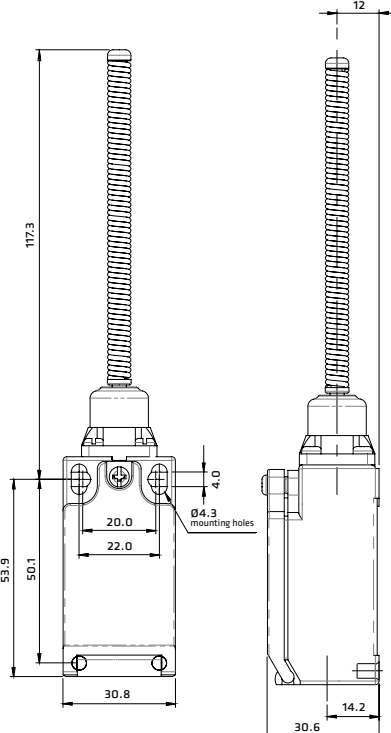
40° 40°

W03
3NC Slow Action

31-32	80°	30°	0	30°	80°
21-22					
11-12					

FTN142: Wobble stick

FTN	1	42	X11	M
Series	Function	Head and actuators	Contact Types	Thread dimension of lead exit
	1 - Without Reset Function	42 - Wobble stick	X11 - 1NC/1NO Slow Action W02 - 2NC Slow Action Z11 - 1NC/1NO Snap Action W12 - 2NC/1NO Slow Action W03 - 3NC Slow Action Slow Action & Snap Action: Type "Zb"	Standard: BLANK - M16 On request: M - M20 N - 1/2NPT G1 - PG11 G3 - PG13.5 C - Connector


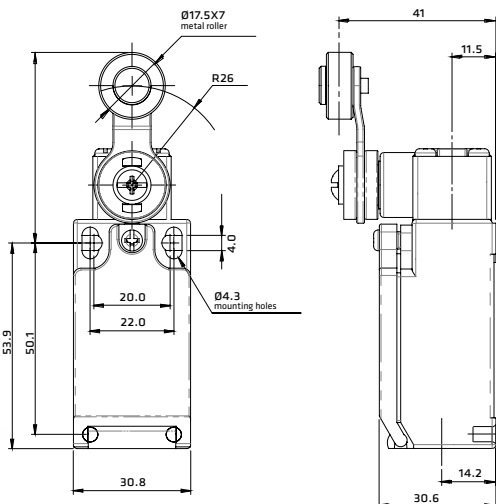



OPERATION DIAGRAMS

X11 1NC/1NO Slow Action	21-22 13-14	<div> <div>12°</div> <div>0</div> <div>12°</div> </div> <div> <div>20°</div> <div>20°</div> </div>
W02 2NC Slow Action	21-22 11-12	<div> <div>12°</div> <div>0</div> <div>12°</div> </div> <div> <div>20°</div> <div>20°</div> </div>
Z11 1NC/1NO Snap Action	→ 21-22 → 13-14 ← 21-22 ← 13-14	<div> <div>12°</div> <div>0</div> <div>12°</div> </div> <div> <div>5°</div> <div>5°</div> </div>
W12 2NC/1NO Slow Action	31-32 21-22 13-14	<div> <div>12°</div> <div>0</div> <div>12°</div> </div> <div> <div>20°</div> <div>20°</div> </div>
W03 3NC Slow Action	31-32 21-22 11-12	<div> <div>12°</div> <div>0</div> <div>12°</div> </div> <div> <div>20°</div> <div>20°</div> </div>

FTN143: Metal roller short lever Ø18

FTN	1	43	X11	M
Series	Function	Head and actuators	Contact Types	Thread dimension of lead exit
	1 - Without Reset Function	43 - Metal roller short lever Ø18	X11 - 1NC/1NO Slow Action W02 - 2NC Slow Action Z11 - 1NC/1NO Snap Action W12 - 2NC/1NO Slow Action W03 - 3NC Slow Action Slow Action & Snap Action: Type "Zb"	Standard: BLANK - M16 On request: M - M20 N - 1/2NPT G1 - PG11 G3 - PG13.5 C - Connector


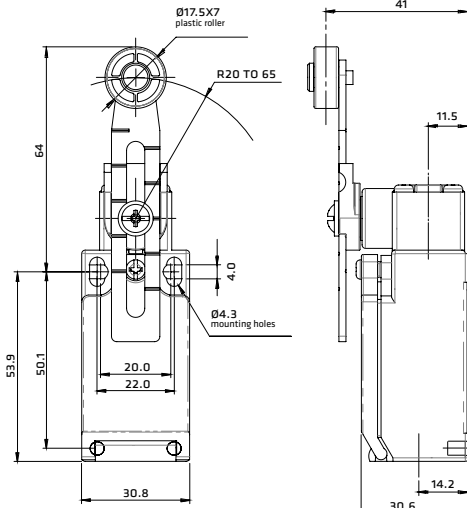



OPERATION DIAGRAMS

X11 1NC/1NO Slow Action	21-22 13-14	<div> <div>80°</div> <div>30°</div> <div>0</div> <div>30°</div> <div>80°</div> </div> <div> <div>40°</div> <div>40°</div> </div>
W02 2NC Slow Action	21-22 11-12	<div> <div>80°</div> <div>30°</div> <div>0</div> <div>30°</div> <div>80°</div> </div> <div> <div>40°</div> <div>40°</div> </div>
Z11 1NC/1NO Snap Action	→ 21-22 → 13-14 ← 21-22 ← 13-14	<div> <div>80°</div> <div>28°</div> <div>0</div> <div>28°</div> <div>80°</div> </div> <div> <div>11°</div> <div>11°</div> </div>
W12 2NC/1NO Slow Action	31-32 21-22 13-14	<div> <div>80°</div> <div>30°</div> <div>0</div> <div>30°</div> <div>80°</div> </div> <div> <div>40°</div> <div>40°</div> </div>
W03 3NC Slow Action	31-32 21-22 11-12	<div> <div>80°</div> <div>30°</div> <div>0</div> <div>30°</div> <div>80°</div> </div> <div> <div>40°</div> <div>40°</div> </div>

FTN144: Variable lenght roller lever Ø18

FTN	1	44	X11	M
Series	Function	Head and actuators	Contact Types	Thread dimension of lead exit
	1 - Without Reset Function	44 - Variable lenght roller lever Ø18	X11 - 1NC/1NO Slow Action W02 - 2NC Slow Action Z11 - 1NC/1NO Snap Action W12 - 2NC/1NO Slow Action W03 - 3NC Slow Action Slow Action & Snap Action: Type "Zb"	Standard: BLANK - M16 On request: M - M20 N - 1/2NPT G1 - PG11 G3 - PG13.5 C - Connector


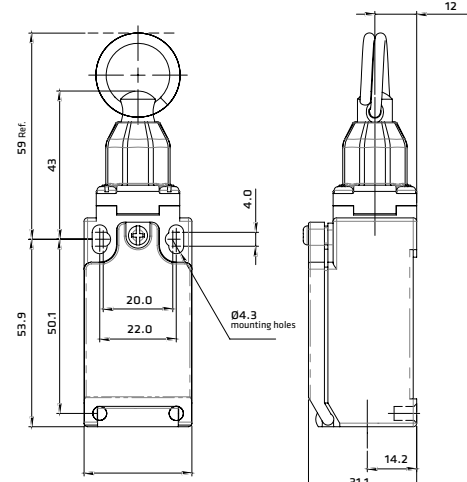



OPERATION DIAGRAMS

X11 1NC/1NO Slow Action	21-22 13-14	<div> <div>80°</div> <div>30°</div> <div>0</div> <div>30°</div> <div>80°</div> </div> <div> <div>40°</div> <div>40°</div> </div>
W02 2NC Slow Action	21-22 11-12	<div> <div>80°</div> <div>30°</div> <div>0</div> <div>30°</div> <div>80°</div> </div> <div> <div>40°</div> <div>40°</div> </div>
Z11 1NC/1NO Snap Action	→ 21-22 → 13-14 ← 21-22 ← 13-14	<div> <div>80°</div> <div>28°</div> <div>0</div> <div>28°</div> <div>80°</div> </div> <div> <div>11°</div> <div>11°</div> </div>
W12 2NC/1NO Slow Action	31-32 21-22 13-14	<div> <div>80°</div> <div>30°</div> <div>0</div> <div>30°</div> <div>80°</div> </div> <div> <div>40°</div> <div>40°</div> </div>
W03 3NC Slow Action	31-32 21-22 11-12	<div> <div>80°</div> <div>30°</div> <div>0</div> <div>30°</div> <div>80°</div> </div> <div> <div>40°</div> <div>40°</div> </div>

FTN198: Rope pull lever

FTN	1	98	X11	M
Series	Function	Head and actuators	Contact Types	Thread dimension of lead exit
	1 - Without Reset Function	98 - Rope pull lever	X11 - 1NC/1NO Slow Action W02 - 2NC Slow Action Z11 - 1NC/1NO Snap Action W12 - 2NC/1NO Slow Action W03 - 3NC Slow Action Slow Action & Snap Action: Type "Zb"	Standard: BLANK - M16 On request: M - M20 N - 1/2NPT G1 - PG11 G3 - PG13.5 C - Connector

OPERATION DIAGRAMS... Coming Soon!

X11 1NC/1NO Slow Action	21-22 13-14	<div> <div>80°</div> <div>30°</div> <div>0</div> <div>30°</div> <div>80°</div> </div> <div> <div>40°</div> <div>40°</div> </div>
W02 2NC Slow Action	21-22 11-12	<div> <div>80°</div> <div>30°</div> <div>0</div> <div>30°</div> <div>80°</div> </div> <div> <div>40°</div> <div>40°</div> </div>
Z11 1NC/1NO Snap Action	→ 21-22 → 13-14 ← 21-22 ← 13-14	<div> <div>80°</div> <div>28°</div> <div>0</div> <div>28°</div> <div>80°</div> </div> <div> <div>11°</div> <div>11°</div> </div>
W12 2NC/1NO Slow Action	31-32 21-22 13-14	<div> <div>80°</div> <div>30°</div> <div>0</div> <div>30°</div> <div>80°</div> </div> <div> <div>40°</div> <div>40°</div> </div>
W03 3NC Slow Action	31-32 21-22 11-12	<div> <div>80°</div> <div>30°</div> <div>0</div> <div>30°</div> <div>80°</div> </div> <div> <div>40°</div> <div>40°</div> </div>

*Available more informations about this type of limit switch in the next page.

FTN198: Rope limit switch... Coming soon!

DESCRIPTION

The FTN198 switch has been specifically studied to control the lift shaft lights. The norm EN81.20 paragraph 5.2.1.5 states the necessity to have a light switching point next to the working area access and in the machines room. To comply with this standard usually at every floor there are installed lighting points which control a step relay with its considerable costs due to the number of the control points and their wiring. The FTN198 switch itself allows to control the shaft lights through its own wiring, without any need of different lighting points, relays or wiring.


INSTALLATION

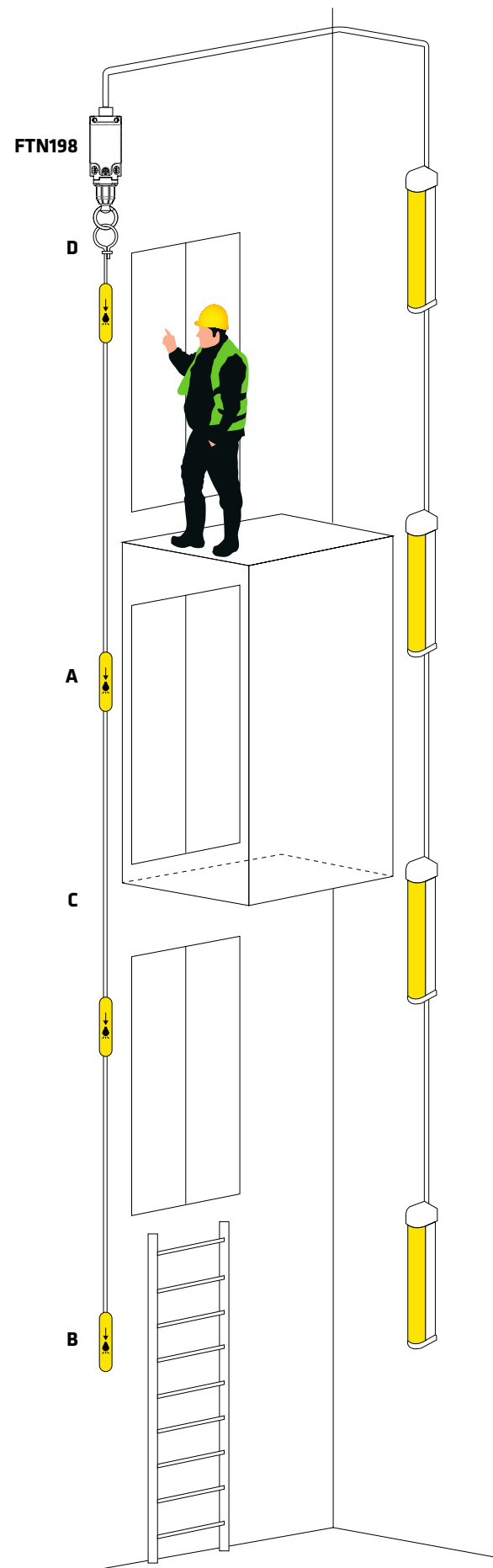
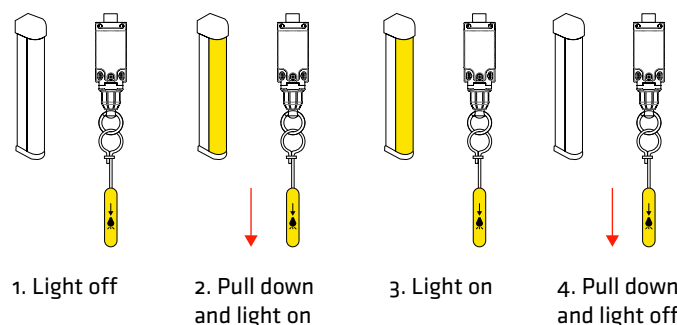
The FTN198 switch is fixed to the superior part of the lift shaft and it's connected to a rope which goes down in the shaft next to the cabin. The rope has to be guided through rings in order to avoid the excessive oscillation caused by the cabin windage. At regular intervals along the rope, usually at every floor, an indicator is fixed to make the rope and its function clearly visible. The last indicator at the end of the rope has a weight inside to keep the rope tight. This way the operator on the cabin roof or in any position along the shaft has the possibility to operate the switch by pulling the practical indicator or the rope itself.

OPERATION

The FTN198 switch has a stable position function, which means that the first operation closes the contacts; the following one opens them and so on. To switch the shaft light on it is sufficient to pull the rope; to switch it off just repeat the operation.

LIMIT SWITCH + ACCESSORIES

FTN198	Rope limit switch
	
ROPE FUNCTION INDICATORS	
Screw tightening torque closure: 0.8 ... 1.0 Nm	
A	End clamp for rope fixing
B	Intermediate rope function indicators
YELLOW/TRANSPARENT ROPE ROLL	
ø3mm with a brass-plated steel core and a PVC coating	
C	100 m rope
D	ROPE EXTREMITY CLAMP



OPERATING FORCE FTN SERIES

TYPE	CONTACT BLOCK		OPERATING TRAVEL		OPERATING FORCE	POSITIVE OPENING		TOTAL TRAVEL
			PT	PT2nd	OF	Travel	Force	
FTN131	X11	1 NC/1 NO Slow Action	2.2 mm	3.0 mm	7.26 N	3.2 mm	19.0 N	6.0 mm
	W02	2 NC Slow Action	2.2 mm	-	7.42 N			
	Z11	1 NC/1 NO Snap Action	1.9 mm	-	6.71 N			
	W12	2 NC/1 NO Slow Action	2.2 mm	3.0 mm	7.26 N			
	W03	3 NC Slow Action	2.2 mm	-	7.42 N			
FTN132	X11	1 NC/1 NO Slow Action	3.0 mm	4.5 mm	5.21 N	5.7 mm	19.0 N	5.2 mm
	W02	2 NC Slow Action	3.0 mm	-	5.26 N			
	Z11	1 NC/1 NO Snap Action	2.9 mm	-	4.74 N			
	W12	2 NC/1 NO Slow Action	3.0 mm	4.5 mm	5.21 N			
	W03	3 NC Slow Action	3.0 mm	-	5.26 N			
FTN133	X11	1 NC/1 NO Slow Action	4.0 mm	6.0 mm	6.37 N	4.6 mm	19.0 N	9.8 mm
	W02	2 NC Slow Action	4.0 mm	-	6.98 N			
	Z11	1 NC/1 NO Snap Action	3.6 mm	-	5.76 N			
	W12	2 NC/1 NO Slow Action	4.0 mm	6.0 mm	6.37 N			
	W03	3 NC Slow Action	4.0 mm	-	6.98 N			
FTN134	X11	1 NC/1 NO Slow Action	2.2 mm	3.0 mm	7.26 N	3.2 mm	19.0 N	6.0 mm
	W02	2 NC Slow Action	2.2 mm	-	7.42 N			
	Z11	1 NC/1 NO Snap Action	1.9 mm	-	6.71 N			
	W12	2 NC/1 NO Slow Action	2.2 mm	3.0 mm	7.26 N			
	W03	3 NC Slow Action	2.2 mm	-	7.42 N			
FTN135	X11	1 NC/1 NO Slow Action	-	-	-	N/A	N/A	N/A
	W02	2 NC Slow Action	12°	-	6.5 N			
	Z11	1 NC/1 NO Snap Action	12°	-	5.3 N			
	W12	2 NC/1 NO Slow Action	-	-	-			
	W03	3 NC Slow Action	12°	-	6.5 N			
FTN136	X11	1 NC/1 NO Slow Action	-	-	-	N/A	N/A	N/A
	W02	2 NC Slow Action	12°	-	6.5 N			
	Z11	1 NC/1 NO Snap Action	12°	-	5.3 N			
	W12	2 NC/1 NO Slow Action	-	-	-			
	W03	3 NC Slow Action	12°	-	6.5 N			
FTN137	X11	1 NC/1 NO Slow Action	30°	41°	1.8 N	45°	19.0 N	80°
	W02	2 NC Slow Action	30°	-	1.8 N			
	Z11	1 NC/1 NO Snap Action	28°	-	1.9 N			
	W12	2 NC/1 NO Slow Action	30°	41°	1.8 N			
	W03	3 NC Slow Action	30°	-	1.8 N			
FTN138	X11	1 NC/1 NO Slow Action	30°	41°	6.5 N	45°	19.0 N	80°
	W02	2 NC Slow Action	30°	-	6.5 N			
	Z11	1 NC/1 NO Snap Action	28°	-	5.3 N			
	W12	2 NC/1 NO Slow Action	30°	41°	6.5 N			
	W03	3 NC Slow Action	30°	-	6.5 N			
FTN139	X11	1 NC/1 NO Slow Action	30°	41°	6.5 N	45°	19.0 N	80°
	W02	2 NC Slow Action	30°	-	6.5 N			
	Z11	1 NC/1 NO Snap Action	28°	-	5.3 N			
	W12	2 NC/1 NO Slow Action	30°	41°	6.5 N			
	W03	3 NC Slow Action	30°	-	6.5 N			



OPERATING FORCE FTN SERIES

Type	Contact Block		Operating Travel		Operating Force	Positive Opening		Total Travel
			PT	PT2nd	OF	Travel	Force	
FTN140	X11	1 NC/1 NO Slow Action	30°	41°	5.2 N	45°	19.0 N	80°
	W02	2 NC Slow Action	30°	-	5.2 N			
	Z11	1 NC/1 NO Snap Action	28°	-	4.5 N			
	W12	2 NC/1 NO Slow Action	30°	41°	5.2 N			
	W03	3 NC Slow Action	30°	-	5.2 N			
FTN140L	X11	1 NC/1 NO Slow Action	30°	41°	5.2 N	45°	19.0 N	80°
	W02	2 NC Slow Action	30°	-	5.2 N			
	Z11	1 NC/1 NO Snap Action	35°	-	5.3 N			
	W12	2 NC/1 NO Slow Action	30°	41°	5.2 N			
	W03	3 NC Slow Action	30°	-	5.2 N			
FTN140R	X11	1 NC/1 NO Slow Action	30°	41°	5.2 N	45°	19.0 N	80°
	W02	2 NC Slow Action	30°	-	5.2 N			
	Z11	1 NC/1 NO Snap Action	28°	-	4.5 N			
	W12	2 NC/1 NO Slow Action	30°	41°	5.2 N			
	W03	3 NC Slow Action	30°	-	5.2 N			
FTN140RL	X11	1 NC/1 NO Slow Action	30°	41°	5.2 N	45°	19.0 N	80°
	W02	2 NC Slow Action	30°	-	5.2 N			
	Z11	1 NC/1 NO Snap Action	35°	-	5.3 N			
	W12	2 NC/1 NO Slow Action	30°	41°	5.2 N			
	W03	3 NC Slow Action	30°	-	5.2 N			
FTN141	X11	1 NC/1 NO Slow Action	30°	41°	6.5 N	45°	19.0 N	80°
	W02	2 NC Slow Action	30°	-	6.5 N			
	Z11	1 NC/1 NO Snap Action	35°	-	5.3 N			
	W12	2 NC/1 NO Slow Action	30°	41°	6.5 N			
	W03	3 NC Slow Action	30°	-	6.5 N			
FTN142	X11	1 NC/1 NO Slow Action	-	-	-	N/A	N/A	N/A
	W02	2 NC Slow Action	12°	-	5.2 N			
	Z11	1 NC/1 NO Snap Action	12°	-	4.5 N			
	W12	2 NC/1 NO Slow Action	-	-	-			
	W03	3 NC Slow Action	12°	-	5.2 N			
FTN143	X11	1 NC/1 NO Slow Action	30°	41°	6.5 N	45°	19.0 N	80°
	W02	2 NC Slow Action	30°	-	6.5 N			
	Z11	1 NC/1 NO Snap Action	35°	-	5.3 N			
	W12	2 NC/1 NO Slow Action	30°	41°	6.5 N			
	W03	3 NC Slow Action	30°	-	6.5 N			
FTN144	X11	1 NC/1 NO Slow Action	30°	41°	6.5 N	45°	19.0 N	80°
	W02	2 NC Slow Action	30°	-	6.5 N			
	Z11	1 NC/1 NO Snap Action	28°	-	5.3 N			
	W12	2 NC/1 NO Slow Action	30°	41°	6.5 N			
	W03	3 NC Slow Action	30°	-	6.5 N			
FTN198	X11	1 NC/1 NO Slow Action	-	-	-			
	W02	2 NC Slow Action	-	-	-			
	Z11	1 NC/1 NO Snap Action	Coming soon!					
	W12	2 NC/1 NO Slow Action	-	-	-			
	W03	3 NC Slow Action	-	-	-			