



## Position Limit switches

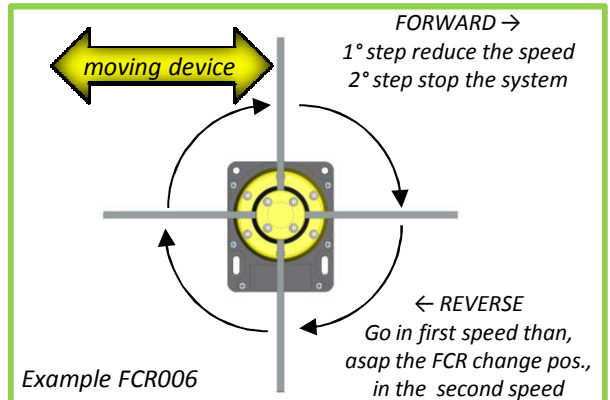
page 36 to 42

The position (rotary-angular) limit switch is used to control several handling system:

- sophisticated crane system:  
the unit controls power operating system (ex. PLC) and allows the crane to slow-down and/or to stop running.
  - hoist:  
the unit is used to stop the hoist running whenever it reaches a “limit” position
- Different combinations available for all standard system.
  - Customization available on request.

## How it works?

As an example, an FCR006 is typically used on a sophisticated crane system. Its function is to control the crane as it approaches operational limits in the following sequence:  
With the crane moving forward the end position, the FCR006 controls the crane’s speed reducing the speed (first step) then stopping the crane (second step) .  
In this position the forward command is no longer enabled.  
Only the reversing command is enabled for operation, in the first speed than in the second speed.

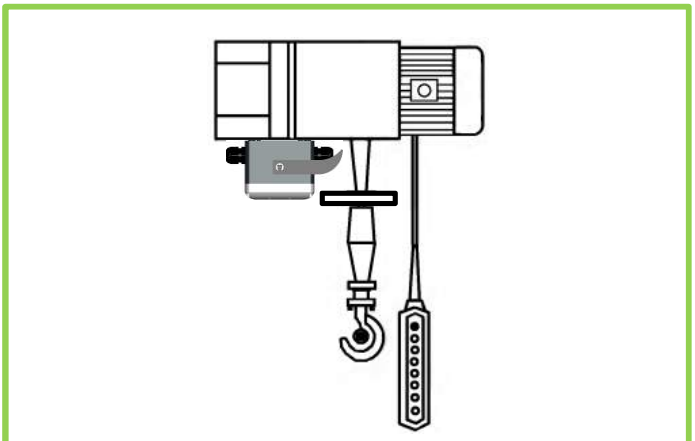
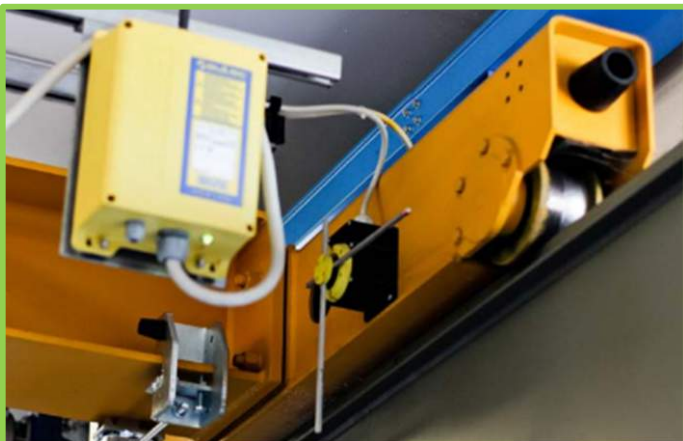


LIMIT SWITCHES



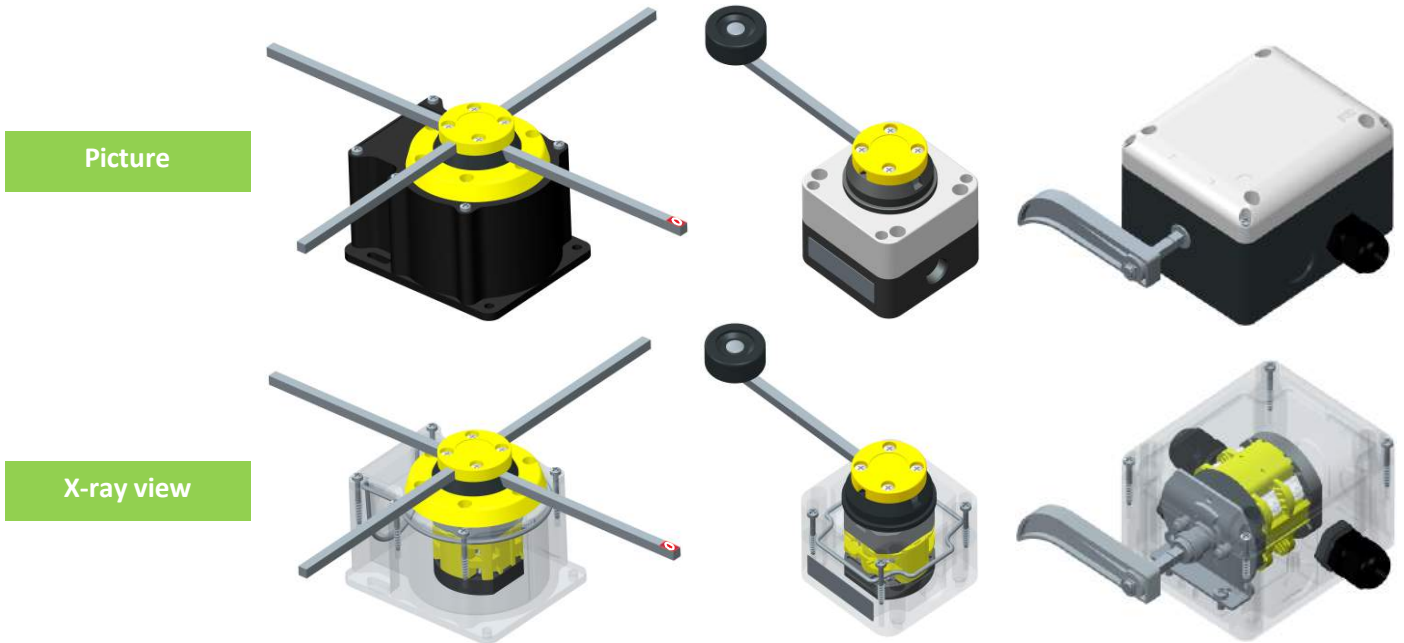
Picture shows a FCR working on a crane system

Picture shows a FCP working on a hoist





Line	FCR	FFH	FCP
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**LIMIT SWITCHES**

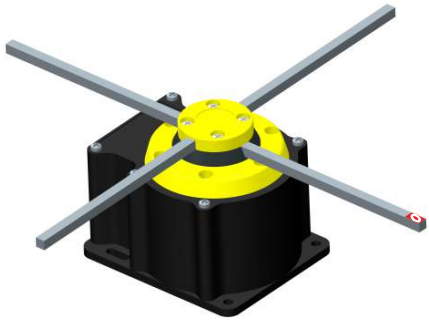
## Characteristics

Standards	IEC/EN 60947/3	IEC/EN 60947/3	IEC/EN 60947/3, EN81-1	
Case	self extinguishing housing V0 UL94	self extinguishing cover V0 UL94	self extinguishing housing V0 UL94	
Protection class IEC/EN 60529	IP65	IP65	IP65	
Cam switch	enclosed thermal current [Ithe]	16A	20A	40A
	rated insulation voltage [Ui]	690V	690V	690V
	product ID	P016 Giovanzana line	PX20 Giovanzana line	CX40 Giovanzana line
	contacts	double gap positive opening	double gap positive opening	double gap positive opening
	markings			
Cable entry	N° 1 dia. 22.5mm	1xM20 + 1xM16	M20 (max 8)	
Versions	- single or double speed motor configuration - 3,4 or 4 with mechanical stop positions	single speed motor configuration (other configuration on request)	two pole on-off switch (other configuration on request)	
Notes	fully adjustable aluminium rods □ 6x300mm with "0" indicator - reinforced mechanical stop	- fully adjustable metallic rods □ 6x120mm - reinforced mechanical stop - rubber covering wheel	- reinforced mechanical stop	



contact open  
 contact close

## Picture



## X-ray view



LIMIT SWITCHES

## Versions

<b>FCR001</b>	single speed	<p>3 positions with mechanical interlock (●)</p>	<table border="1"> <tr><td>3-4</td><td></td><td></td><td></td></tr> <tr><td>1-2</td><td></td><td></td><td></td></tr> <tr><td>Cont. Pos.</td><td>-90°</td><td>0</td><td>+90°</td></tr> </table>	3-4				1-2				Cont. Pos.	-90°	0	+90°														
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<b>FCR002</b>	single speed	<p>3 positions with mechanical interlock (●)</p>	<table border="1"> <tr><td>7-8</td><td></td><td></td><td></td></tr> <tr><td>5-6</td><td></td><td></td><td></td></tr> <tr><td>3-4</td><td></td><td></td><td></td></tr> <tr><td>1-2</td><td></td><td></td><td></td></tr> <tr><td>Cont. Pos.</td><td>-90°</td><td>0</td><td>+90°</td></tr> </table>	7-8				5-6				3-4				1-2				Cont. Pos.	-90°	0	+90°						
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<b>FCR003</b>	single speed	<p>4 positions NO mechanical interlock</p>	<table border="1"> <tr><td>3-4</td><td></td><td></td><td></td><td></td></tr> <tr><td>1-2</td><td></td><td></td><td></td><td></td></tr> <tr><td>Cont. Pos.</td><td>0</td><td>90°</td><td>180°</td><td>270°</td></tr> </table>	3-4					1-2					Cont. Pos.	0	90°	180°	270°											
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<b>FCR004</b>	single speed	<p>4 positions NO mechanical interlock</p>	<table border="1"> <tr><td>-</td><td>empty</td><td></td><td></td><td></td></tr> <tr><td>5-6</td><td></td><td></td><td></td><td></td></tr> <tr><td>-</td><td>empty</td><td></td><td></td><td></td></tr> <tr><td>1-2</td><td></td><td></td><td></td><td></td></tr> <tr><td>Cont. Pos.</td><td>0</td><td>90°</td><td>180°</td><td>270°</td></tr> </table>	-	empty				5-6					-	empty				1-2					Cont. Pos.	0	90°	180°	270°	
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<b>FCR005</b>	single speed	<p>4 positions NO mechanical interlock</p>	<table border="1"> <tr><td>-</td><td>empty</td><td></td><td></td><td></td></tr> <tr><td>5-6</td><td></td><td></td><td></td><td></td></tr> <tr><td>-</td><td>empty</td><td></td><td></td><td></td></tr> <tr><td>1-2</td><td></td><td></td><td></td><td></td></tr> <tr><td>Cont. Pos.</td><td>0</td><td>90°</td><td>180°</td><td>270°</td></tr> </table>	-	empty				5-6					-	empty				1-2					Cont. Pos.	0	90°	180°	270°	
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<b>FCR006</b>	two speeds	<p>4 positions with mechanical interlock (●)</p>	<table border="1"> <tr><td>7-8</td><td></td><td></td><td></td><td></td></tr> <tr><td>5-6</td><td></td><td></td><td></td><td></td></tr> <tr><td>3-4</td><td></td><td></td><td></td><td></td></tr> <tr><td>1-2</td><td></td><td></td><td></td><td></td></tr> <tr><td>Cont. Pos.</td><td>-180°</td><td>-90°</td><td>0</td><td>+90°</td><td>+180°</td></tr> </table>	7-8					5-6					3-4					1-2					Cont. Pos.	-180°	-90°	0	+90°	+180°
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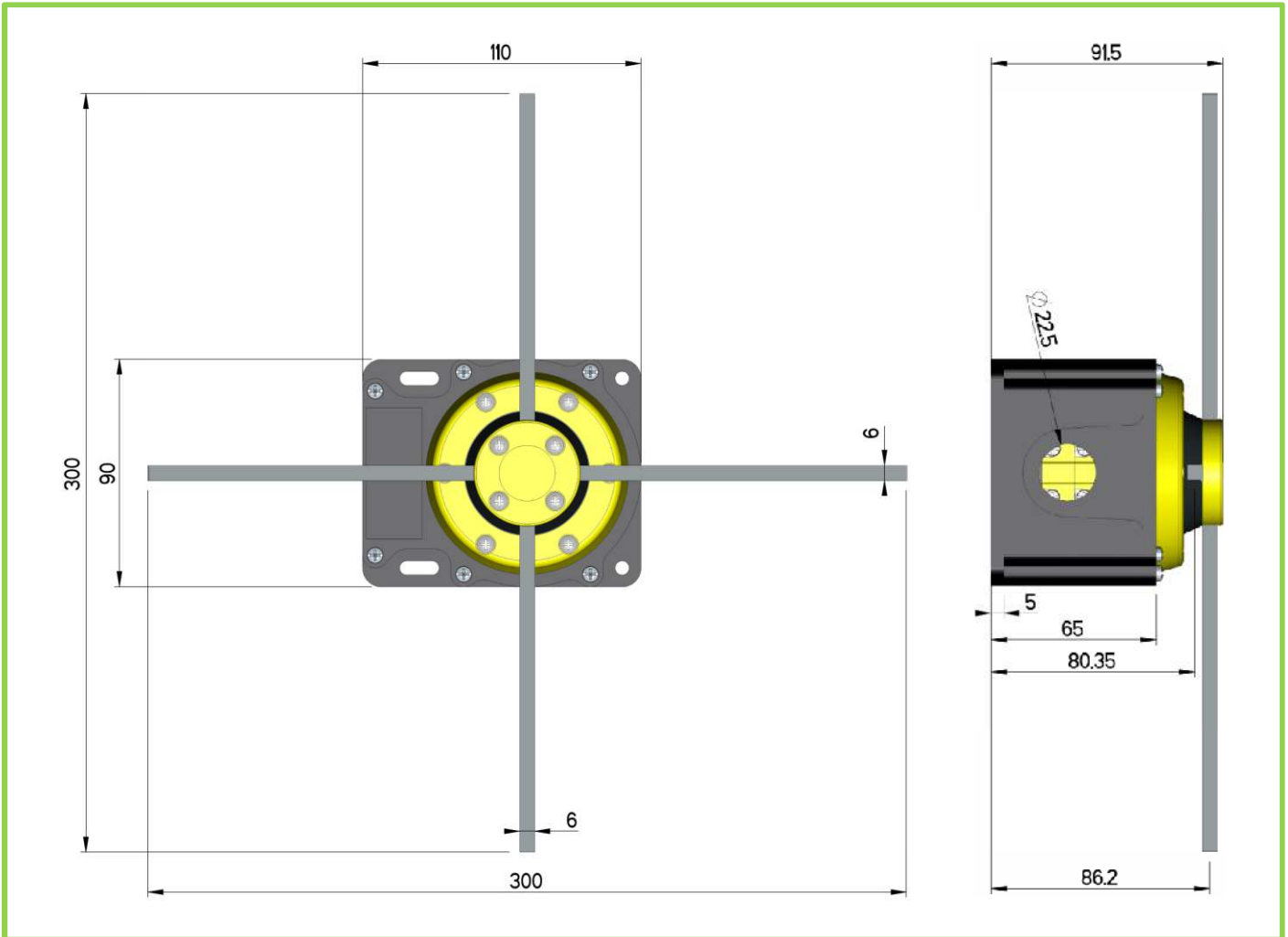
## Characteristics

Standards	IEC/EN 60947/3	
Case	self extinguishing housing V0 UL94	
Protection class IEC/EN 60529	IP65 (double insulation )	
Cam switch	enclosed thermal current [I <sub>the</sub> ]	16A
	rated insulation voltage [U <sub>i</sub> ]	690V
	product ID	P016 Giovenzana line
	contacts	double gap positive opening
	markings	
Cable entry	N° 1 dia. 22.5mm	
Versions	- single or double speed motor configuration - 3,4 or 4 with mechanical stop positions	
Notes	fully adjustable aluminium rods □ 6x300mm with "0" indicator - reinforced mechanical stop	

Other versions available on request →

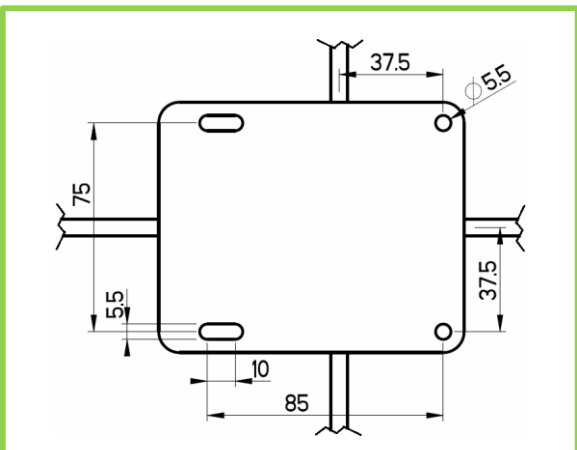


Dimensions



LIMIT SWITCHES

Fixing holes

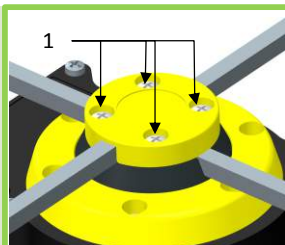


Section view

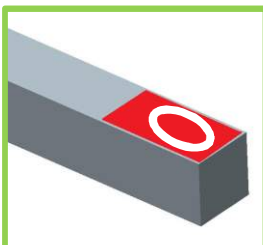


Rods adjusting guide

- I. Loosen the four screws (1)
- II. Adjust the rods
- III. Tighten the four screws (1)

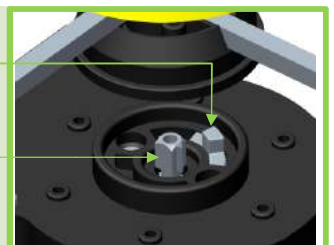


"ZERO" indicator



Reinforced mechanical stop insert

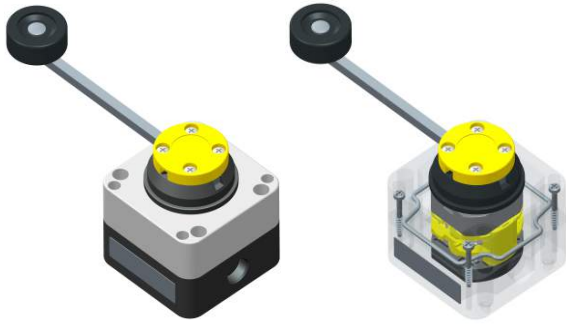
- metallic stop insert
- metallic cam's control shaft







## Picture



X-ray view

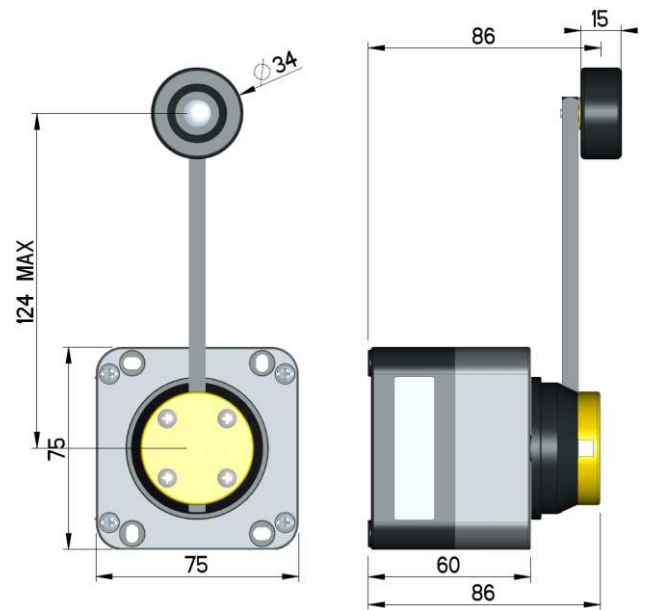
□ contact open  
■ contact close

## Versions

<b>FFH2C</b>	single speed	<p>3 positions automatic return to "0" with mechanical interlock (●)</p>	<table border="1"> <tr> <td>3-4</td> <td>□</td> <td>■</td> <td>□</td> </tr> <tr> <td>1-2</td> <td>□</td> <td>■</td> <td>□</td> </tr> <tr> <td>Cont. Pos.</td> <td>-65°</td> <td>0</td> <td>+65°</td> </tr> </table>	3-4	□	■	□	1-2	□	■	□	Cont. Pos.	-65°	0	+65°
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1-2	□	■	□												
Cont. Pos.	-65°	0	+65°												
<b>FFH2C-1</b>	single speed	<p>3 positions automatic return to "0" with mechanical interlock (●)</p>	<table border="1"> <tr> <td>3-4</td> <td>□</td> <td>■</td> <td>□</td> </tr> <tr> <td>1-2</td> <td>□</td> <td>■</td> <td>□</td> </tr> <tr> <td>Cont. Pos.</td> <td>-65°</td> <td>0</td> <td>+65°</td> </tr> </table>	3-4	□	■	□	1-2	□	■	□	Cont. Pos.	-65°	0	+65°
3-4	□	■	□												
1-2	□	■	□												
Cont. Pos.	-65°	0	+65°												

↑ Other versions available on request

## Dimensions



## Characteristics

Standards	IEC/EN 60947/3	
Case	self extinguishing housing V0 UL94	
Protection class IEC/EN 60529	IP65 (double insulation □)	
Cam switch	enclosed thermal current [Ithe]	20A
	rated insulation voltage [Ui]	690V
	product ID	PX20 Giovanzana line
	contacts	double gap positive opening ▶
	markings	
Cable entry	1xM20 + 1xM16	
Versions	single speed motor configuration (other configuration on request)	
Notes	-fully adjustable metallic rods □ 6x120mm - reinforced mechanical stop - rubber covering wheel	

## Reinforced mechanical stop insert

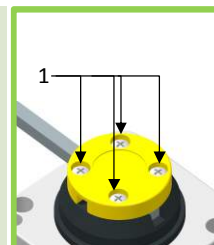


## Section view

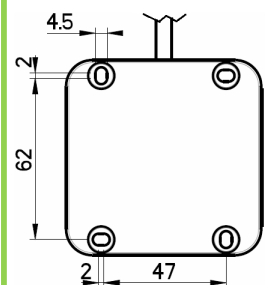


## Rod adjusting guide

- I. Loosen the four screws (1)
- II. Adjust the rods
- III. Tighten the four screws (1)

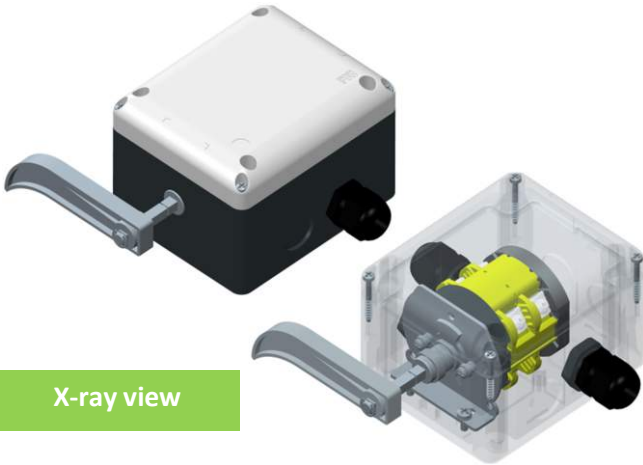


## Fixing holes





## Picture



contact open  
 contact close

## Versions

FCP245	single speed	<p>3 positions automatic return to "0" with mechanical interlock (●)</p>	<table border="1"> <tr> <td>3-4</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>1-2</td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> </table>	3-4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1-2	<input type="checkbox"/>	<input checked="" type="checkbox"/>
			3-4	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
1-2	<input type="checkbox"/>	<input checked="" type="checkbox"/>							
Cont. Pos.	-50°	0	+50°						

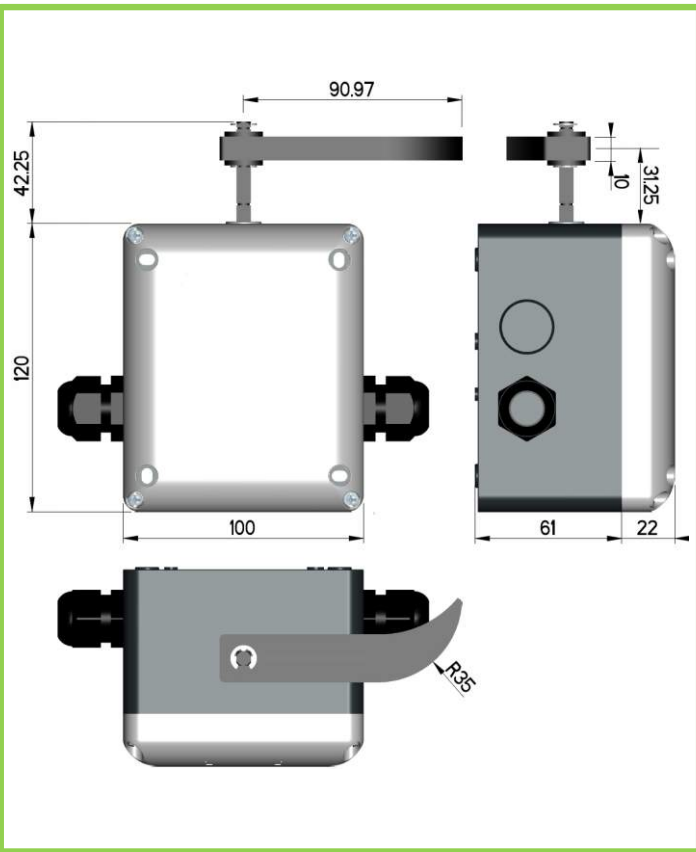
↑ Other versions available on request

## X-ray view

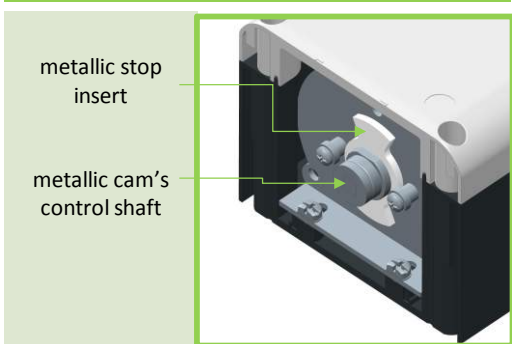
## Characteristics

Standards	IEC/EN 60947/3	
Case	self extinguishing housing V0 UL94	
Protection class IEC/EN 60529	IP65 (double insulation )	
Cam switch	enclosed thermal current [I <sub>the</sub> ]	40A
	rated insulation voltage [U <sub>i</sub> ]	690V
	product ID	CX40 Giovanzana line
	contacts	double gap positive opening
	markings	
Cable entry	M20 (max 8)	
Versions	two pole on-off switch (other configuration on request)	
Notes	- reinforced mechanical stop	

## Dimensions



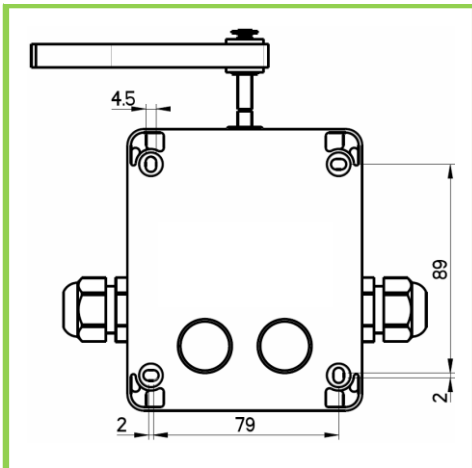
## Reinforced mechanical stop insert



## Section view



## Fixing holes



LIMIT SWITCHES


**LIMIT SWITCHES**

General characteristics		FCR	FFH	FCP
Markings		<b>CE EAC</b>	<b>CE</b>	<b>CE</b>
Standards		IEC/EN 60947/3	IEC/EN 60947/3	IEC/EN 60947/3
Case		self extinguishing housing V0 UL94	self extinguishing housing V0 UL94	self extinguishing housing V0 UL94
Protection class IEC/EN 60529		IP65 (double insulation <input type="checkbox"/> )	IP65 (double insulation <input type="checkbox"/> )	IP65 (double insulation <input type="checkbox"/> )
Climate temperature	Operating	-25°C + 55°C		
	Storage	-30°C + 70°C		
Cable entry		N° 1 dia. 22.5mm	1xM20 + 1xM16	M20 (max 8)
Versions		- single or double speed motor configuration - 3,4 or 4 with mechanical stop positions	single speed motor configuration (other configuration on request)	two pole on-off switch (other configuration on request)
Notes		fully adjustable aluminium rods <input type="checkbox"/> 6x300mm with "0" indicator - reinforced mechanical stop	- fully adjustable metallic rods <input type="checkbox"/> 6x120mm - reinforced mechanical stop - rubber covering wheel	- reinforced mechanical stop
Weight KG (approx)		0.5	0.35	0.55
Electrical characteristics		FCR	FFH	FCP
Cam switch product ID		P016 Giovanzana line	PX20 Giovanzana line	CX40 Giovanzana line
Standards		IEC/EN 60947/3 – UL508	IEC/EN 60947/3 – UL508	IEC/EN 60947/3 – UL508
Markings		<b>CE</b> <b>EAC</b>	<b>CE</b> <b>EAC</b>	<b>CE</b> <b>EAC</b>
Enclosed thermal current [Ithe]		16A	20A	40A
Rated insulation voltage [Ui]		690V	690V	690V
Frequency		50/60 Hz	50/60 Hz	50/60 Hz
Rated operating current	AC21A-AC22A	16A - 690Vac	20A - 690Vac	40A - 690Vac
	AC23A 3ph 230V	13A - 4kW	16A - 5kW	35A - 11kW
	AC23A 3ph 400V	13A - 7.5kW	16A - 9kW	32A – 18.5kW
Rated short circuit withstand current (gG 20A - 690V)		5kA	5kA	10kA
Contacts		double gap positive opening	double gap positive opening	double gap positive opening
Connections	caliber	A3 (EN60947-1)	A3 (EN60947-1)	A5 (EN60947-1)
	screw size	M3.5	M3.5	M4
	max torque	0.8 Nm (EN60947-1) 7.5 lb.in. (UL508)	0.8 Nm (EN60947-1) 7.5 lb.in. (UL508)	1.2 Nm (EN60947-1) 10.6 lb.in. (UL508)
Connectable section	flexible or solid min/MAX	1x0.75/4 – 2x0.75/2.5	1x0.75/4 – 2x0.75/2.5	2x2.5/10
	flexible or solid AWG	16-12	16-12	14-6