

# FFH

## POSITION LIMIT SWITCH



Before use, read this booklet carefully to acquaint yourself with the features of the product. This booklet is an integral part of the product and therefore must be kept until the product is dismissed.



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Position limit switches FFH are designed and manufactured according to IEC international standard and EN European regulations.



Any improper installation or any tampering of the device may cause serious personnel injury or property damage, therefore, the installation and maintenance must be performed by specialized and authorized personnel.



The use of this device is not allowed in environment with a potentially explosive atmosphere or in presence of corrosive substances and in salt spray.



The FFH limit switches rotary gear position are used to control several handling systems:

- **Bridge cranes:** the limit switch controls the operating system, for example a PLC, and allows the bridge crane to slow down or stop.
- **Hoists:** the limit switch is used to stop the hoist whenever it reaches a limit position.



They are suitable for use in industrial environment with machinery monitoring and protection purpose.

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# SPECIFICATIONS

## General technical data

Standards	IEC/EN 60947/3
Case	self extinguishing housing V0 UL94
Protection class IEC/EN 60529	IP67 double insulation
Cable entry	M16 / M20
Operating temperature	-25 ... +55°C
Storage temperature	-30 ... +70°C
Notes	- 200/300 mm adjustable aluminium rods with "0" indicator - reinforced mechanical stop

## Cam switch technical data

Product ID	P016 Giovenzana line		
Rated enclosed thermal current	I <sub>the</sub>		16 A
Rated insulation voltage	U <sub>i</sub>		690 V
Connections	terminals gauge	EN60947-1	A3
	terminals screw		M3.5
	tightening torque	EN60947-1 UL508	0.8 N×m / 7.2 lb×in 7.5 lb×in / 0.85 N×m
Connectable section	flexible cable		1 × 0.75 ... 4 mm <sup>2</sup> or 2 × 0.75 ... 2.5 mm <sup>2</sup> 18 ... 10 AWG
	rigid cable		1 × 0.75 ... 4 mm <sup>2</sup> or 2 × 0.75 ... 2.5 mm <sup>2</sup> 18 ... 10 AWG
Contacts	double breaking		

## Certifications

Limit switches FFH series are in conformity with the following standards or other normative documents:

EN 60947-1	2007/A1 : 2011/A2 : 2014
EN 60947-3	2009/A1 : 2012/A2 : 2015
EN 60204-1	2006/A1 : 2009
EN 60529	1991/A1 : 2000/A2 : 2013
EN 50581	2012
IEC 63000	2016

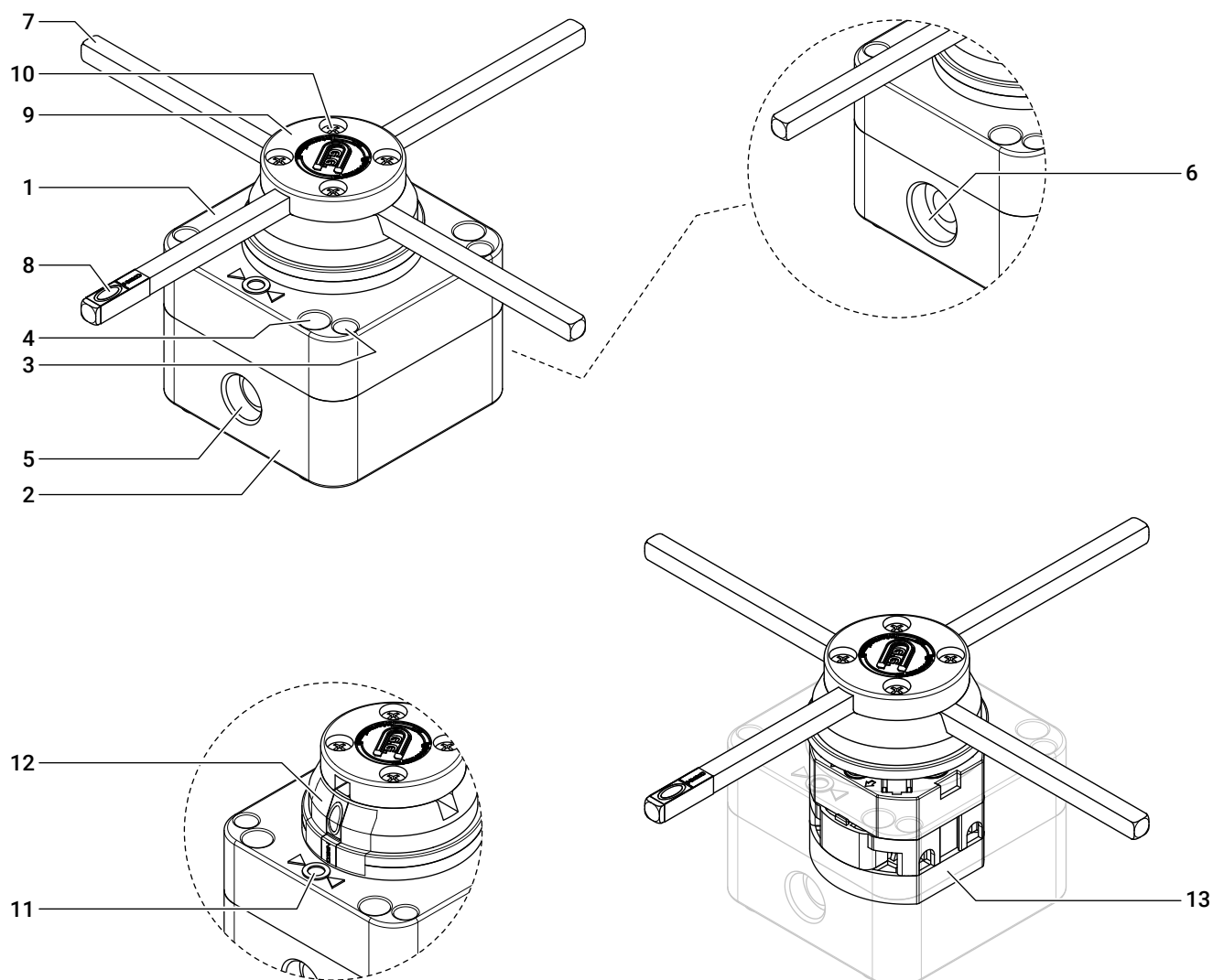
and therefore follow the provision of the Directives:

2014/35/UE
2011/65/UE
2015/863/UE

## Markings



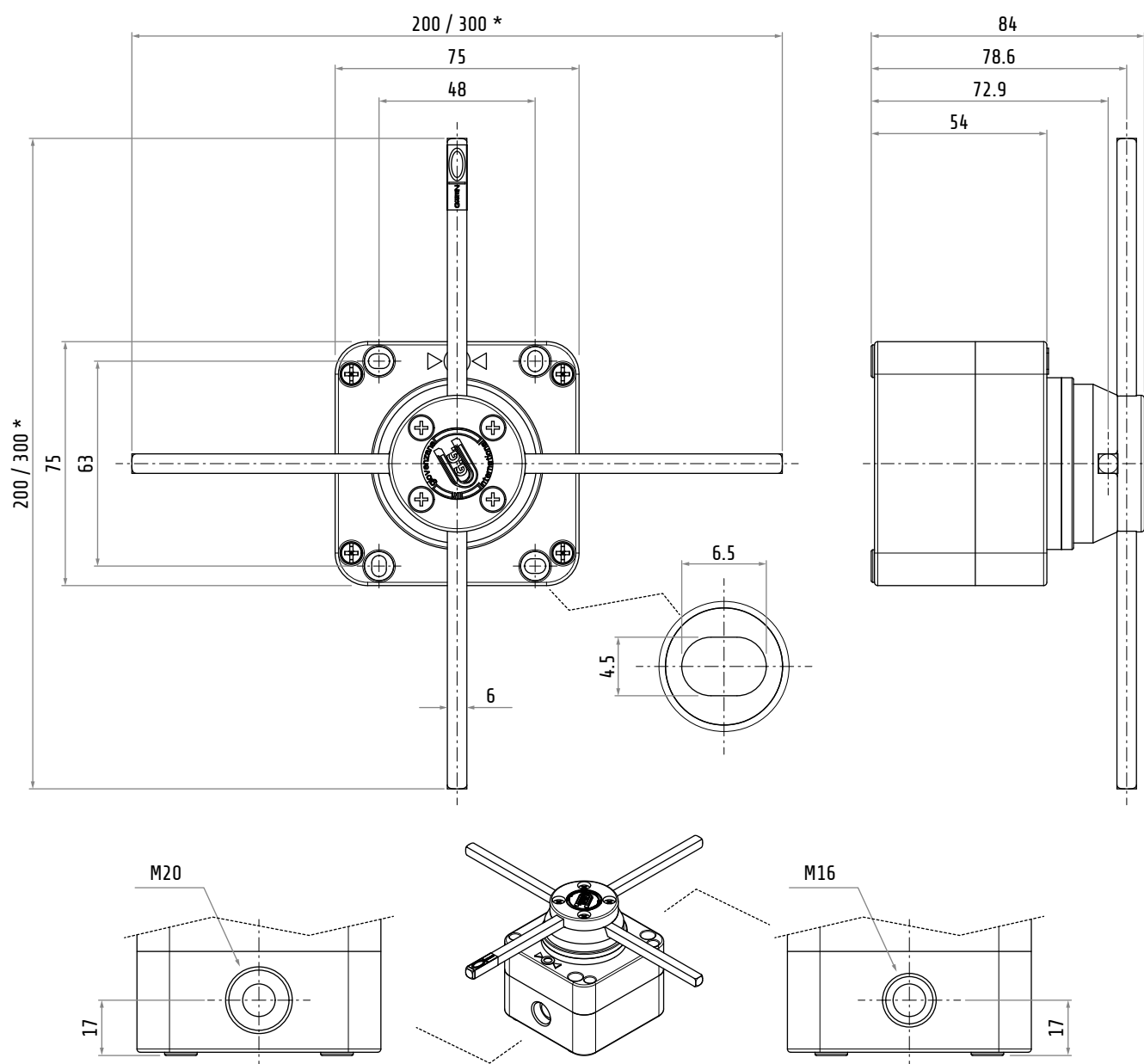
## Main components



1	Cover
2	Base
3	Cover fixing screws M4×30
4	Holes for installation screws
5	M20 knockout
6	M16 knockout
7	Shaft 6×6 mm

8	Shaft red label for "0 position"
9	Shaft fixing disk
10	Disk fixing screws 3E9×13
11	"0 position" marking
12	Head red label for "0 position"
13	Cam switch

## Overall dimensions

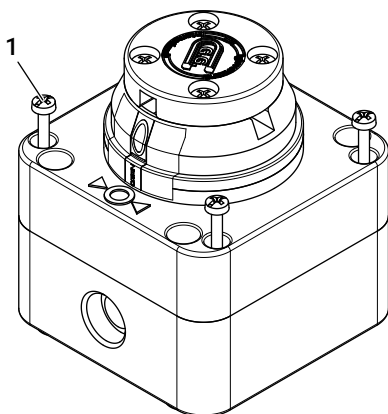


Dimensions in mm / illustrations NOT in scale

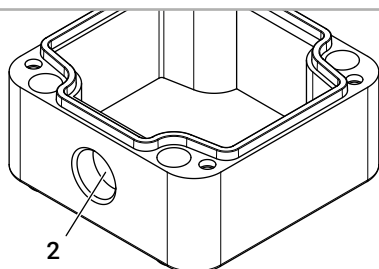
\* The length of the rods varies according to the model

## WIRING

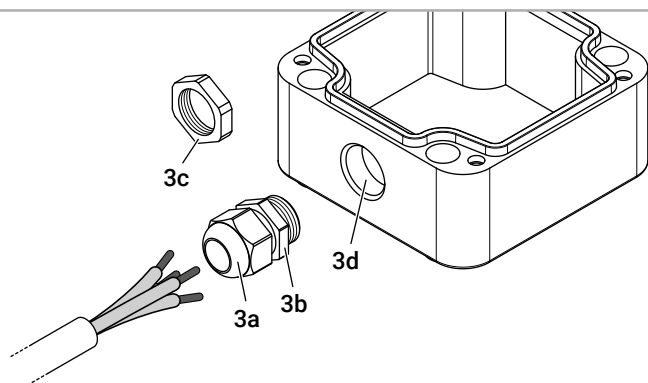
- 1** Unscrew the 4 screws and open the limit switch body.



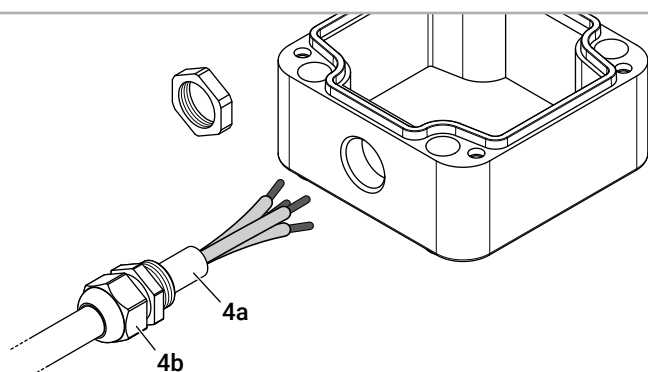
- 2** Depending on the need, break one or both the knock-outs (M16 / M20) with a suitable object, such as a screwdriver.



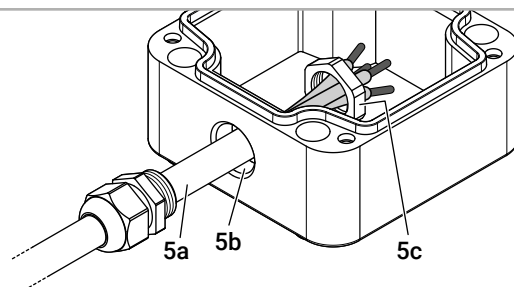
- 3** Loosen the sealing nut (a) of a cable gland (a-b-c) matching the chosen knock-out (d).



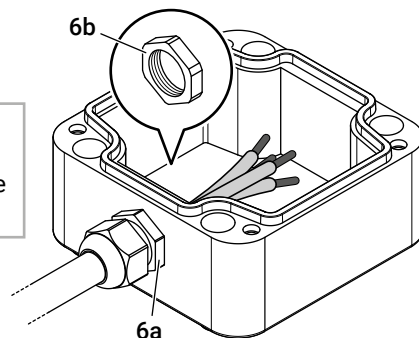
- 4** Insert a suitable cable (a) into the cable gland (b).



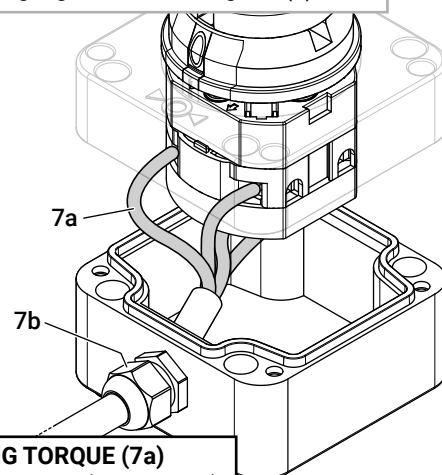
- 5** Insert the cable (a) in the limit switch base (b) passing it also through the lock nut (c).



- 6** Fix the cable gland (a) and then tighten the lock nut (b).



- 7** Wire (a) the cam switch according to the diagram in paragraph "Cam switch operation" p.8. After wiring, tighten the sealing nut (b).



### TIGHTENING TORQUE (7a)

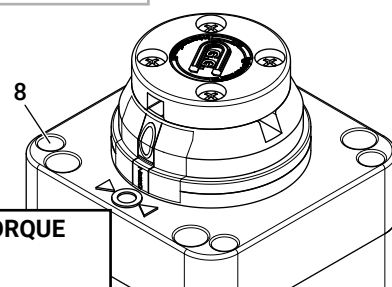
0.8 N×m / 7.2 lb×in (EN60947-1)  
7.5 lb×in / 0.85 N×m (UL508)



### ATTENTION

Carry out the wiring so that the cables do not get in the way when closing the cover.

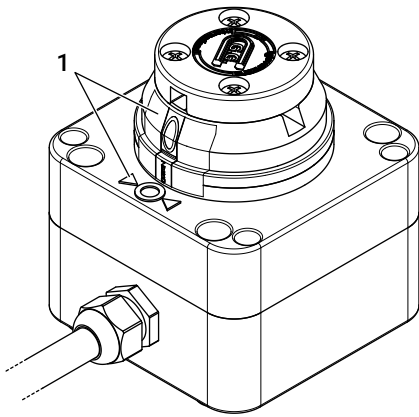
- 8** Refit the cover on the base with the 4 screws.



### TIGHTENING TORQUE

1.2 - 1.4 N×m  
10.6 - 12.4 lb×in

## ROD POSITIONING

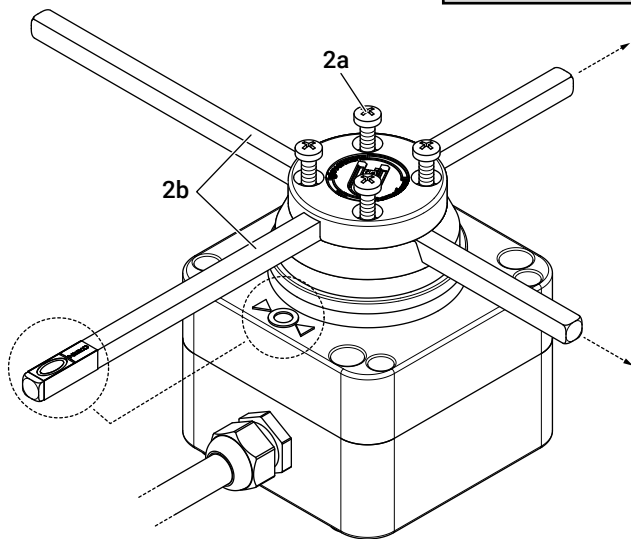
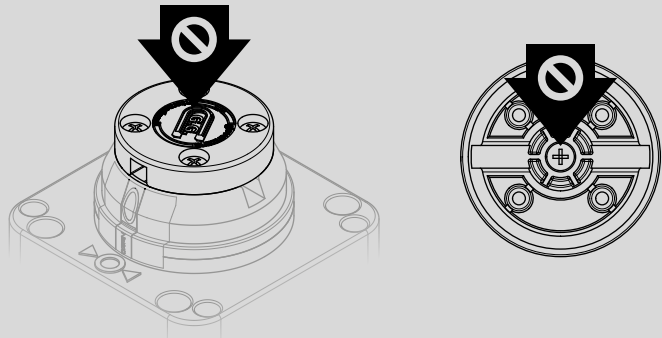


- 1 Make sure that the position of the rotating bush is on "0" referring to the sticker positioned on the bush itself. After the correct positioning remove the reference sticker.

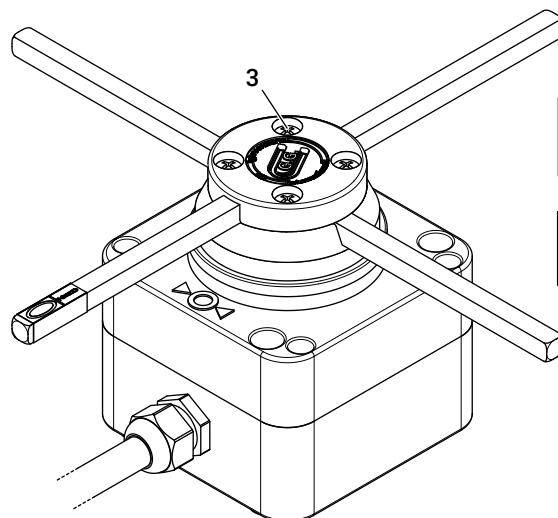


### ATTENTION

DO NOT REMOVE THE SHAFT FIXING DISK FOR ANY REASON. IN CASE OF ACCIDENTAL REMOVAL, **DO NOT TAMPER THE CENTRAL SCREW UNDER ANY CASE AND FOR ANY REASON. ANY TAMPERING WILL RESULT IN IRREPARABLE DAMAGE TO THE LIMIT SWITCH.**



- 2 Loosen without removing the 4 screws (a) of the fixing disk. Insert the rods (b) matching the one with the "0" indicator with the ">0<" on the cover.



- 3 Tighten the 4 screws of the fixing disk.

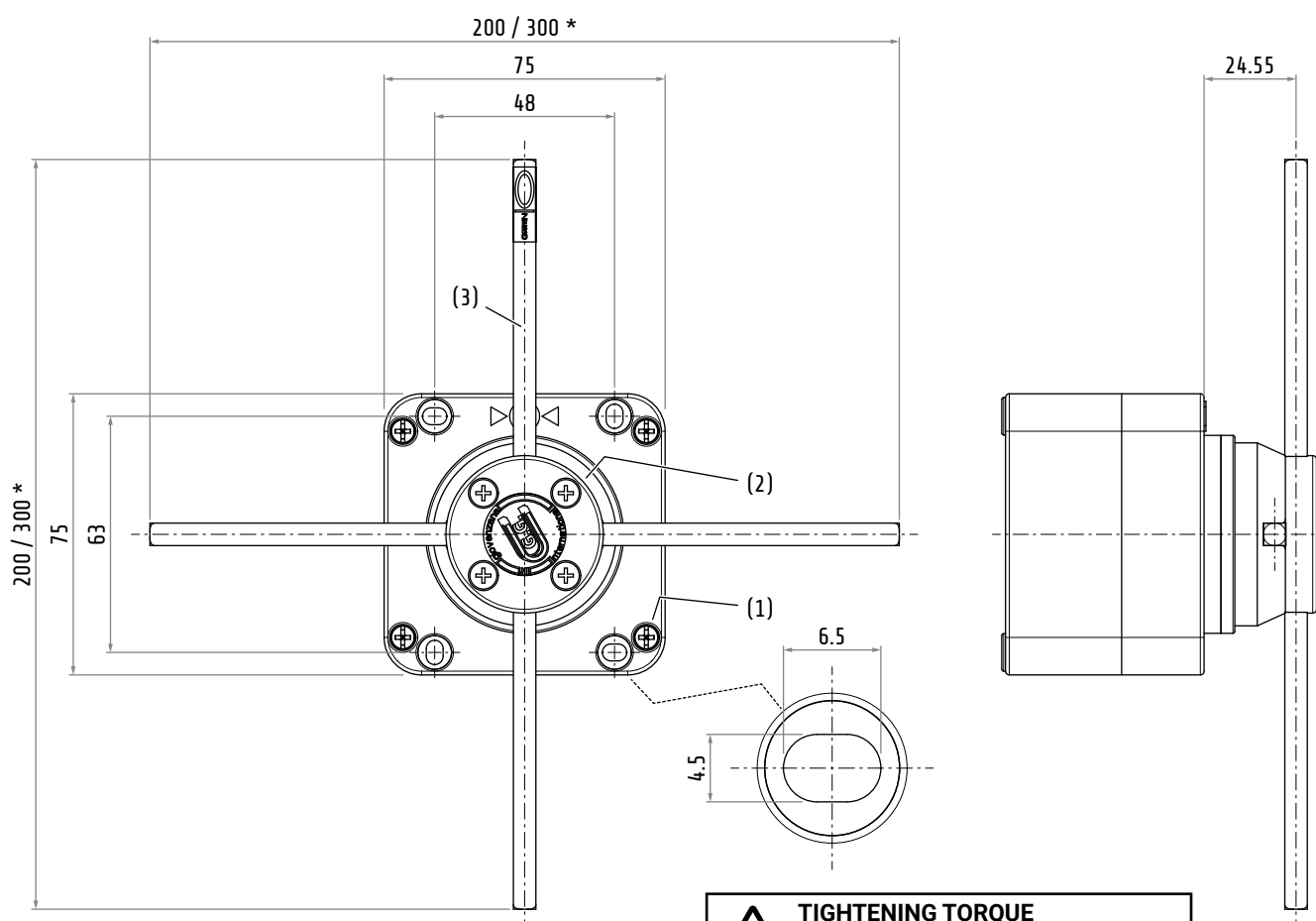


### TIGHTENING TORQUE

1.2 - 1.4 Nxm / 10.6 - 12.4 lbxin

# INSTALLATION

## Installation dimensions and rods calibration



**TIGHTENING TORQUE**  
1.2 ... 1.4 N×m / 10.6 ... 12.4 lb×in

**1** Fix the limit switch with 4 suitable screws (1) (not supplied) into the service position, considering the drilling pattern and the overall dimensions shown in the picture.

**2** After fixing the limit switch it is possible to calibrate it by loosening the 4 screws of the disk (2) and sliding the rods (3).



### ATTENTION

Please note that in this example the "0" has been positioned upwards.



### ATTENTION

The range of adjustmet follows the rules on the paragraph "Operation" p.7.

Dimensions in mm / illustrations NOT in scale

\* The length of the rods varies according to the model

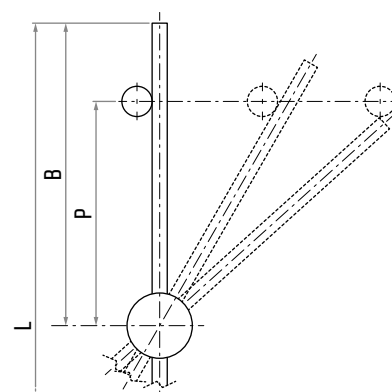
## Operation

Total length	L	300 mm	200 mm
Arm length	B	150 mm	100 mm
Maximum operation distance	P	101 mm	67 mm



### ATTENTION

Do not adjust the arm length (B) with values not allowed. A not allowed arm length could compromise the operation of the limit switch and therefore cause serious damages to things and people during use.

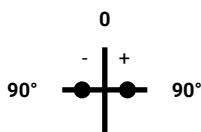


## VERSIONS

### Cam switch operation

#### FFH001

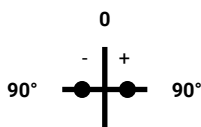
- Single speed
- 3 positions
- With mechanical interlock ●



1	3-4		×	×
	1-2	×	×	
		-90°	0	+90°

#### FFH002

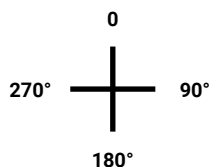
- Single speed
- 3 positions
- With mechanical interlock ●



2	7-8		×	×
	5-6	×	×	
1	3-4		×	×
	1-2	×	×	
		-90°	0	+90°

#### FFH003

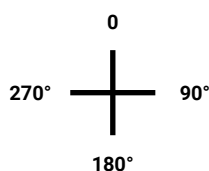
- Single speed
- 4 positions rotary
- Without mechanical interlock



1	3-4	×		×	
	1-2	×		×	
		0	90°	180°	270°

#### FFH004

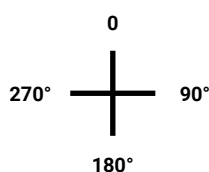
- Single speed
- 4 positions rotary
- Without mechanical interlock



2					
	5-6	×	×		×
1					
	1-2	×			
		0	90°	180°	270°

#### FFH005

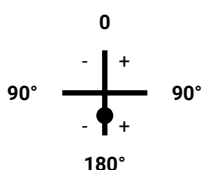
- Single speed
- 4 positions rotary
- Without mechanical interlock



2					
	5-6	×			×
1					
	1-2	×	×		
		0	90°	180°	270°

#### FFH006

- Double speed
- 4 positions
- With mechanical interlock ●



2	7-8	×	×	×	×	
	5-6	×	×	×		
1	3-4			×	×	×
	1-2		×	×	×	×
		-180°	-90°	0	+90°	+180°

CUSTOM VERSIONS AVAILABLE ON REQUEST