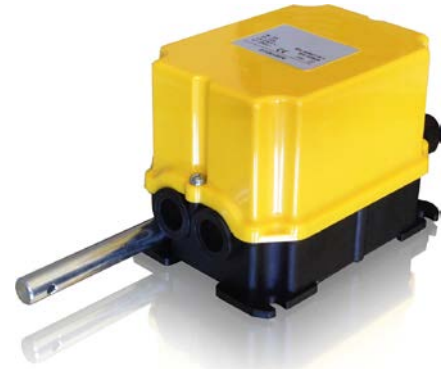




General Features

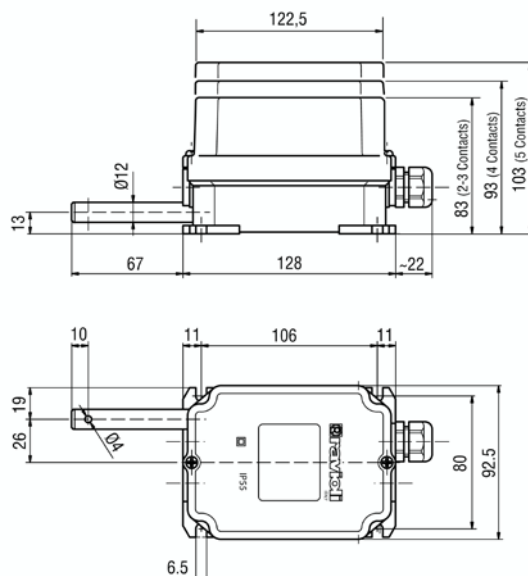
The rotary limit switch is a device which allows you to control the movement of industrial and building machines. The shaft is connected to the motor, so that, after a certain number of turns, the cams make the switches work, and then they can carry out their pre-set manoeuvre. The range of FCN rotary limit switches has been planned with a particular internal symmetry that allows you to have a series of 5 microswitches (on-off exits) as well as some other linear exits, and a potentiometer in the same box. The innovative and thorough regulation of the cams allows you to set the microswitches working point linearly and micrometrically. Reduction ratios range turns out to be remarkably large, since microswitches can be fitted with guaranteed opening (EN 60947-5-1) as well as deviation or progressive double opening contacts. The choice of different cam profiles allows you to modify the limit switches function diagram.



Technical Features

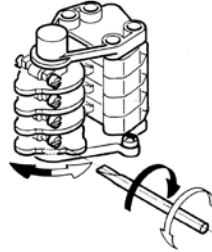
- **Compliance** with EEC Directives 98/37/CE 2006/95/CE
- **Compliance** with rules CEI EN 60947-1 CEI EN 60947-5-1 CEI EN 60204-1 CEI EN 60529
- **Insulation voltage** 250V~
- **Maximum operating voltage** 250V~
- **Black lower casing** reinforced nylon
- **Yellow cover** high mechanical and thermal resistant thermoplastic
- **Operating temperature** - 20 °C + 60 °C
- **Drive worm** screw
- **Cable entries** PG 11
- **Insulation** according to EN 60947-5-1
- **Protection degree** IP 55 - EN 60529
- **Protection** against contact voltages double insulation EN 60439-1
- **Weight** 460 g (approx.)

Dimensions



Cams regulation and contact

Regulation criteria Each cam is equipped with its own micrometer regulating screw. Each screw operates exclusively on the cam it is combined with, without interfering mechanically against its adjacent cams. Regulation can simply be carried out by rotating the regulating screw through a small blade screwdriver. Thanks to a particular friction system, rapidity and regulation precision are assured, which makes the structure stable, steady and reliable.



Contact Technical Features

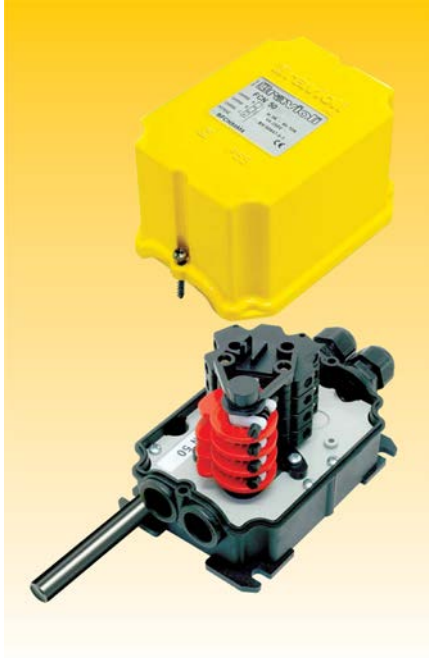
Microswitches	1NC slow SAFETY 1NA+1NC rapid NO SAFETY 2NC progressive SAFETY 1NA+1NC slow SAFETY	type P type D type M type MD
Insulation Voltage Ui	250 V ~	
Test voltage	2000 V ~	
Operating current	10(3) A	
Breaking Power	according to EN 60947-5-1	
Mechanical lifetime	2x10 6th op	
Terminals	with screw	

Performances					
AC15	Volt	24	48	110	230
	Ampere	10	10	6	3
DC13	Volt	24	48	110	230
	Ampere	3	1,5	1	0,5

Standard Cams profiles

Type	profile	color
A		White
B		Grey
C		Red
D		White

Standard Executions



Reduction ratio:

- 1: 7,5 rotations
- 1: 15 rotations
- 1: 25 rotations
- 1: 35 rotations
- 1: 50 rotations
- 1: 60 rotations
- 1: 100 rotations
- 1: 140 rotations
- 1: 200 rotations
- 1: 275 rotations
- 1: 400 rotations
- 1: 550 rotations

Upon request it is possible for us to transmit you some data concerning all the real turns according to the different available types of cams. Standard executions are provided with 2 or even 4 contacts. Limit switches with 3 and 5 contacts can also be realized upon request and according to the necessary quantity.

Order codes

B	FCN	xxx	y	z
	Name of product	Reduction ratio	Type contact (P-D-M-MD)	Number of contact (2-3-4-5)

Where a potentiometer is required, it is necessary to add: K 5 for 5 Kohm potentiometer K 10 for 10 Kohm potentiometer after the number of the contacts

If not specified, limit switches are supplied with white type A cams. To specify a cam different from white type A, it is necessary to add: **B for 45° lever C for 90° lever D for 180° lever**

Custom Execution

FCN limit switches can be customized according to the order quantity. Specific customizations:

- shafts cut to measure
- cable entry in frontal or lateral position
- different contacts
- regulation cams with different profiles
- measuring accessories, such as potentiometers or encoders
- customized nameplates

For Your Safety

Installation and maintenance requirements

INSTALLATION AND WIRING

The limit switches must be installed by qualified personnel, in compliance with the current safety norms. Before wiring, the machine power supply must compulsorily be interrupted. Correct installation calls for working temperatures from -20°C to +60°C. The limit switch must not be used in any area which turn out to be potentially explosive, corrosive or with high sodium chloride contents. Acid, oil and solvent may cause the device deterioration; therefore it is recommended not to use either oil or fat to lubricate any part of the limit switch. The wiring installation must be completed and tested according to the current norms, in conformity with the electrical wiring diagram of the machine. After the installation, it is compulsory to check if both the limit switch and the machine it controls work correctly.

Operations for limit switch installation:

- remove the cover by loosening the retaining screws
- connect the limit switch shaft to the external drive element by using a flexible joint, the male connection or the cog wheels, in order to avoid any misalignment between the shafts
- fix firmly the limit switches by using the baseplate or the flange to prevent it from anomalous vibrations.

Wiring Operations:

- introduce the multipolar cable into the special cable entry
- strip the cable for electrical connection to the microswitches and potentiometer
- tape the initial part of the cable
- lock the cable in the cable entry
- carry out the electrical connection by tightening the microswitch screws to maximum torque of 0,8 Nm
- set the position of the cams by adjusting the regulation screws
- regulate the potentiometer
- replace the cover and make sure that the gasket is correctly positioned in its housing.

Maintenance Operations:

- check if both the screws on the cover and the inner clamps are correctly tightened
- check if the multipolar cable is secured in the cable entry
- check wiring conditions
- check the integrity of the gasket inside the cover
- check that the drive system is functioning correctly and the shafts are in alignment
- check that the limit switches are safely fixed
- check the integrity of the box

Accessories



The range of the accessories integrates and completes the limit switches series and facilitates their use according to particular requirements.

A series of cog wheels, a male connection and a flexible shaft are the interfaces which have specifically been designed in order to transmit the motion easily from the motor shaft to the limit switch shaft. The fitting of a potentiometer, an encoder or another position sensor close to the micro switch group involves a linear exit in the same box.

Cog Wheels

A series of cog wheels of different diameters allows you an easy joining through pinions and belts.

Available wheels:

- Module 5 with 12 teeth
- Module 6 with 11 teeth
- Module 8 with 12 teeth
- Module 10 with 12 teeth
- Module 14 with 10 teeth



Male connection

The male connection helps the joining to motors or reducing gears.



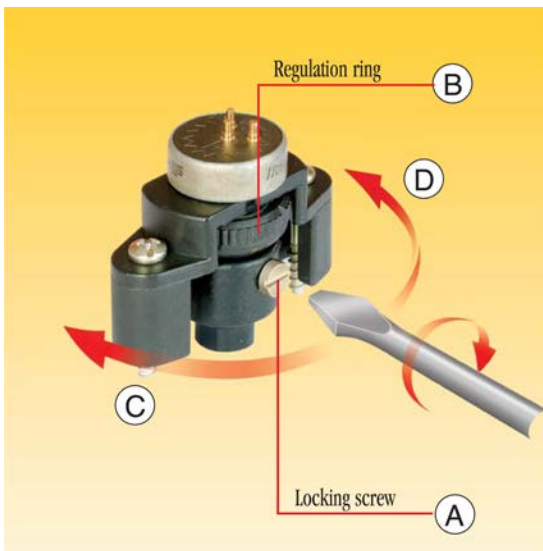
Flexible Shaft

The flexible shaft allows you to couple the shafts that are not perfectly aligned.



Attachment Flange

The flange interface allows the limit switch to be fixed without the special fixing plate



Potentiometer

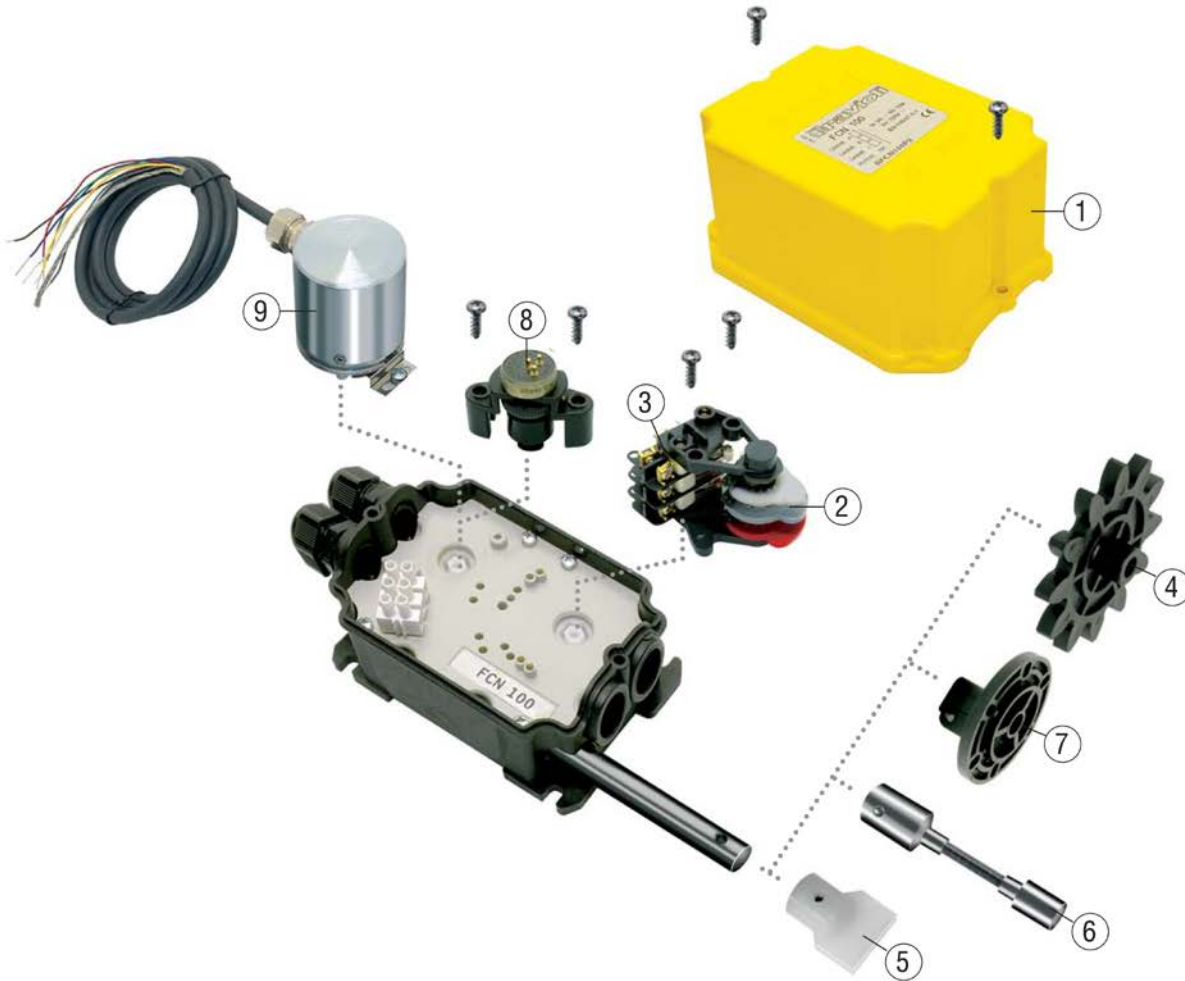
The insertion of a potentiometer near the microswitch group involves a linear exit in the same box.

Regulation

- Ensure that the locking screw (A) is loosened.
- Set the desired resistance value by means of the instruments by rotating the regulating ring(B) clockwise (C) to reduce it, or anti-clockwise (D) to increase it.
- Tighten the lock screw (A)

Important: The potentiometer follows the cams rotation direction.

Spare Parts



Spare Parts

Pos.	Code	Description
1	B50454	Cover 2 - 3 contacts
	B50442	Cover 4 contacts
	B50447	Cover 5 contacts
2	BLEVFCNA	White cam A
	BLEVFCNB	Grey cam B
	BLEVFCNC	Red cam C
	BLEVFCND	White cam D
3	BFCNAPINT	Contact 1NC slow (P)
	BFCNDINT	Contact 1NO INC quick (D)
	BAPO2PRFC	Contact 2NC progressive slow (M)
	BAP11FC	Contact 1NO INC slow (MD)

Accessories

Pos.	Code	Description
4	BMOD5FC	Cog wheel mod 5 Z12
	BMOD6FC	Cog wheel mod 6 Z11
	BMOD8FC	Cog wheel mod 8 Z12
	BMOD10FC	Cog wheel mod 10 Z12
	BMOD14FC	Cog wheel mod 14 Z10
5	BINNFC	Male connection
6	BAFLESFC	Flexible shaft
7	BFLANFCN	Attachment flange
8	—	Potentiometer
9	—	Encoder on demand