CAM LIMIT SWITCH
FRS SERIES

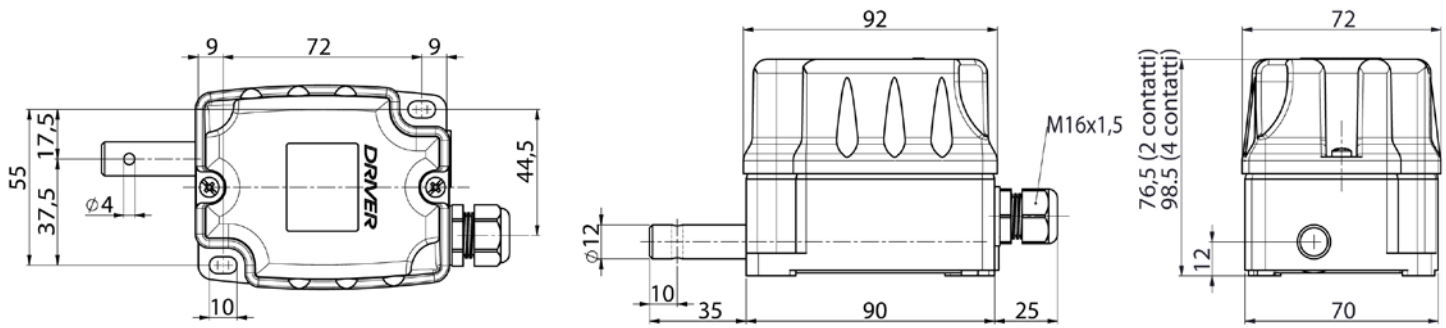
General Features

The rotary limit switch Driver FRS Series is a device used to control the movement of construction machines and industrial machines in general. It is connected via its shaft to a motor in a manner that, after a programmed number of revolutions, the cams cause the intervention of the internal contacts. The adjustment of the cams, innovative and precise, allows to determine the point of operation of the microswitches in a linear and micrometric. There is a wide range of gear ratios and alternatively you can mount a series of sensors corner which realize multiple linear outputs. The contacts are in positive opening (EN 60947-5-1) in order to increase the safety of the people. A large number of accessories completes the range of the limit switch, facilitating its use.

Technical Features

- **Directive conformity** CEE 2006/42/CE 2011/65/UE
- **Rules conformity** EN 60947-1 EN 60947-5-1 EN 60204-1 EN 60529 EN 60439-1
- **Insulation Voltage** 250V~
- **Maximum Voltage** 250V~
- **Base** black nylon additive
- **Cover yellow** thermoplastic high mechanical and thermal resistance
- **Operating Temperature** -20 °C + 60 °C -40 °C + 60 °C (on request)
- **Worm transmission**
- **Standard cable input**: 1 cable gland M16 x 1,5
- **Protection Degree IP** 65
- **Protection** against contact voltages on double insulation
- **Maximum rpm** 500
- **CE omologation**
- **Weight** about 300 gr (2 contact model)
- **Made in Italy product** – patented shape

Dimensions



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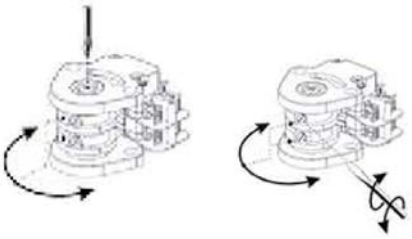
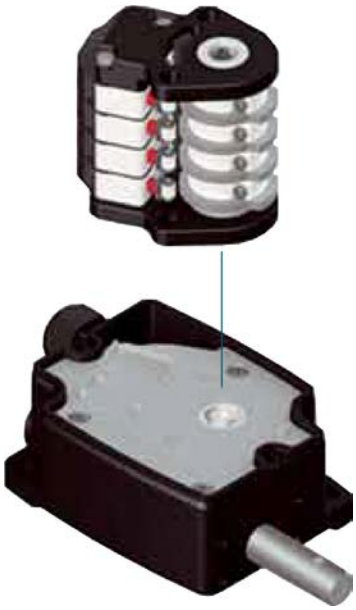
Contacts and Regulations Cam

Each cam is equipped with its own adjusting screw micrometer. The adjustment is made simply using a screwdriver.





1. Adjusting fast optional
• loosen the screw top
• rotate hand cams
• tighten the top screw (1 Nm torque)

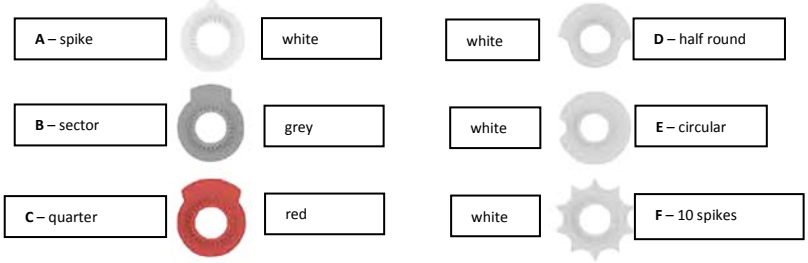
2. Fine adjustment
• turn the adjusting screw for each cam
• Recommended screwdriver 4.0 x 0.8

The particular system of clutch, ensures rapidity and precision of regulation and guarantees stability, consistency and reliability in time.

Contacts Technical Features

- **Microswitch** 1NO 1NC fast open guarantee model R white color (fingerproof) model D with gold contact (on request)
- **Rules conformity** EN 60947-5-1
- **Insulation Voltage** 250V~
- **Utilization Category** AC-15, Ue 250V, Ie 3A
- **Current** Ith 10A
- **Interruption power** in compliance with EN 60947-5-1
- **Insulation** in compliance with EN 60947-5-1
- **Mechanical life** $30 \cdot 10^6$ cycle
- **Clamp** screw with finger protection
- **Terminal** in compliance with EN 50013
- **Fuse** 10 A gG
- **Life for resistive load** 250V~ 6A: 105 cycle
- **Life for inductive load** 250V~ 3A: 0,3 · 105 cycle
- **Life in D.C.** 24V= 20W L/R 40ms: 3 · 105 cycle
- **Omologation** CE - IMQ CA 02.03310

Standard Cams Profile



If not further specified, the limit switches are supplied with the cam white type A. Other profiles on request

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Standard Executions

Codes to order, the product code is made up as follows:

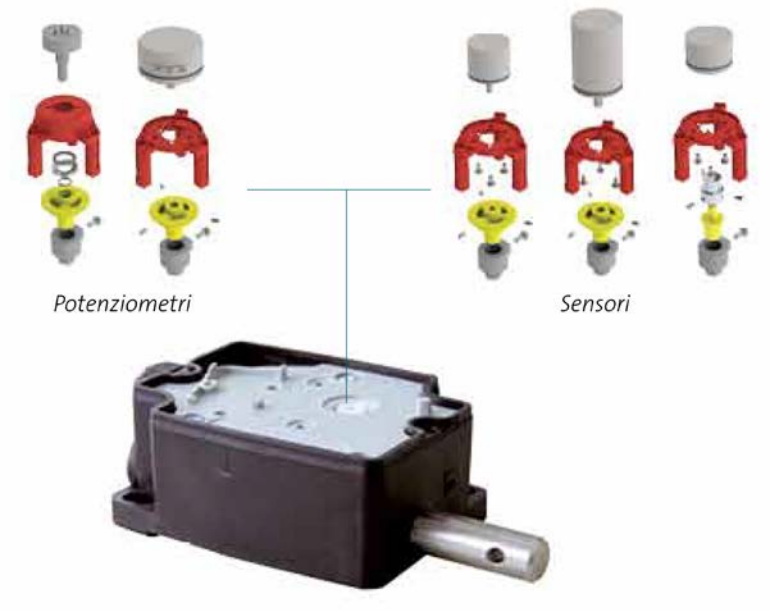
B FRS XXX Y N

Reduction Ratio

Contact number (**2-3-4**)

Contact model (**R-D**)

If not further specified, the limit switches are supplied with the lever type A. For any use of levers different from type A, use the bottom of the code: B / C / D / E / F



The experience gained and shared with many manufacturers of position sensors allowed us to achieve the necessary interfaces to fit various sensors of different brands, according to the demands of our customers, as an alternative to contacts.

Standard reduction ratio

1 : 10 - 15 - 25 - 35 - 50 - 75 - 100 - 150 - 175 - 200
The standard types are 2 and 4 contacts.
Also available 3 contacts on request and for quantities.

Customized Executions

- different lenght shaft
- cable gland output on side
- different cams
- custom stickers
- cover with a custom color

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For your safety

Requirements for installation and maintenance
INSTALLATION AND WIRING
The installation of the limit switch FRS series Drivers must be performed by qualified personnel, in compliance with current safety standards. Before wiring is mandatory cut power to the machine and put it safely. For proper installation predict Operating ambient temperature between -20 ° C and + 60 ° C. The switch is not suitable for use in potentially explosive, corrosive or with high content of sodium chloride. Acids, oils and solvents may degrade the device; the limit switch is lubricated "for life", then it is recommended not to use oil or grease to lubricate. The wiring must be performed in a workmanlike manner, in accordance with the wiring diagram of the machine. After the installation is necessary to check the correct operation of the limit switch and the driven machine.

Operations for the installation:
• remove the cover (1) by unscrewing the fixing screws
• combine the limit switch shaft with the drive member, preventing misalignments between the trees and possibly using the flexible coupling (6), or the male coupling (7), or modules toothed (4)
• fix firmly the limit switches using the slotted mounting feet or the flange (5) optional, and help avoiding abnormal vibrations.

Operations for wiring:
• insert the cable into the cable gland
• strip the cable for electrical connection with the switches (2)
• tape the initial cable
• Tighten the cable gland
• make the electrical connections of the micro switches (2) by tightening the screws with maximum torque of 0.5Nm
• if there is a potentiometer (8) or other transducer (9) to position insert the cable gland, taping and tighten the cable gland, connect the conductors in the appropriate way
• adjust the position of the cams (3) by turning the adjusting screws (3); in the case of large displacements can loosen all the group acting on the central screw and manually moving the cams (3). After this rough adjustment, tighten the center screw and adjust screws lateral registry to get a fine adjustment
• adjust the potentiometer or any other transducer following the specific instructions provided with the product or requesting them to us directly

Operations for maintenance:
• check the correct tightening of the screws of the cover (1)
• check the tightness of the gland around the cable
• check the condition of the wiring
• check the integrity of the seal inside of the lid (1)
• verify the accuracy and the alignment of the drive system
• check the fixing of the limit switch
• check the integrity of the case

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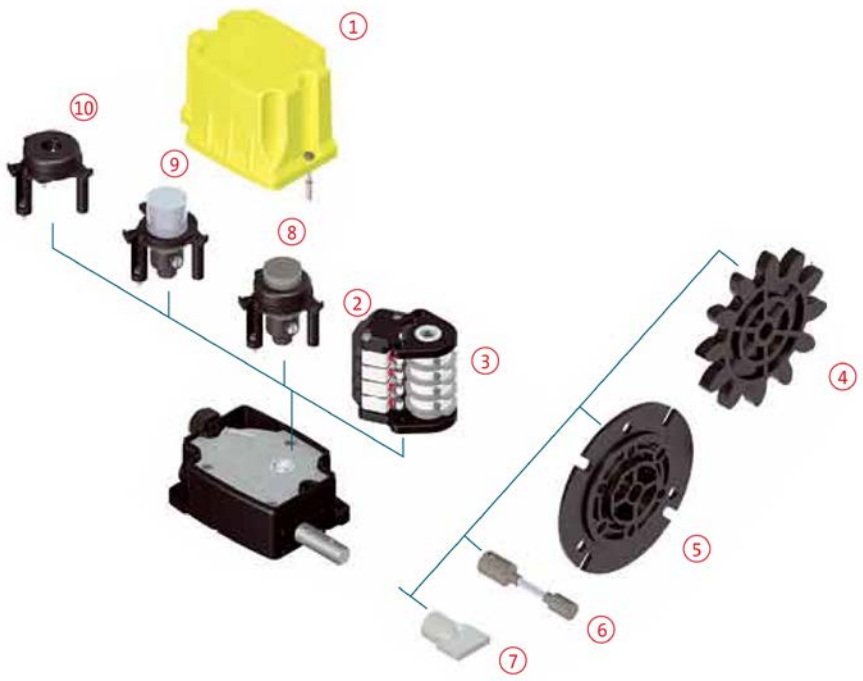
Spare parts and accesories



Spare parts

Pos.	Code	Description
1	B51529	Cover for 2 micro
	B51530	Cover for 3-4 micro
2	BR11FR	Fast contact R 1NA/1NC white
	BD11FR	Gold contact D 1NA/1NC

Pos.	Code	Description
3	BCAMAFR	Cam A – spike
	BCAMBFR	Cam B – sector
	BCAMCFR	Cam C – quarter
	BCAMDFR	Cam D – half turn
	BCAMEFR	Cam E – circular
	BCAMFFR	Cam F – 10 spike

Accessories

Pos.	Code	Description
4	BMOD5FC	Gear M5 – Z12
	BMOD6FC	Gear M6 – Z11
	BMOD8FC	Gear M8 – Z12
	BMOD10FC	Gear M10 – Z12
	BMOD12Z10	Gear M12 – Z10
	BMOD12Z12	Gear M12 – Z12
	BMOD14FC	Gear M14 – Z10
	BMOD16Z10	Gear M16 – Z10
	BMOD18Z10	Gear M18 – Z10
	BMOD18Z11	Gear M18 – Z11
	BMOD20Z8	Gear M20 – Z8
	BMOD20Z11	Gear M20 – Z11

Pos.	Code	Description
5	BFLANFRM	Flange
6	BAFLESFC	Flexible shaft
7	BINNFC	Male joint
8	-	Potentiometer (on request)
9	-	Other sensor (on request)
10	-	Plastic support (on request)

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