



BASE

ROTARY LIMIT SWITCH

The rotary limit switch is used to control the movement of industrial machinery. It operates as an auxiliary controller of electrical motors through a power interface, such as a contactor or PLC. Its shaft can be connected to the motor and, after a set number of revolutions, the cams operate the switches, thus starting the predetermined movement.

FEATURES

A worm gear and a helical toothed gear combined with one or more pairs of straight toothed gears are used for the transmission of the movement from the input shaft to the output shaft. Revolution ratios ranging from 1:15 to 1:1500 result from the use of different combinations of gear wheels between the input shaft and the output shaft, which is connected to the cams operating the switches. Each cam can be set with great accuracy thanks to the cam adjusting screws. Overall dimensions are suitable for assembly in narrow spaces. The auxiliary switches are of the positive opening type.

OPTIONS

Base can be equipped with cam sets with a maximum of 6 switches.
 The limit switch is available with direct control switches to operate directly on the motor.
 The limit switch can be fitted with a flange for direct coupling to the motor.
 Different labels and colors are also available.

MATERIALS

Transmission and gear driving shafts are made of stainless steel to prevent oxidation and wear. The gear wheels and the driving bushes are made of self-lubricating technopolymer material, suitably chosen to reduce the wear to a minimum and to maintain the accuracy of the couplings over time. Sintered bronze bushes are moulded into the base of the limit switch to optimize the shaft rotation and to prevent rubbing with plastic material. Materials and components are wear resistant and protect the equipment against water and dust.



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LIFTING**



**INDUSTRIAL
AUTOMATION**



**STAGE
TECHNOLOGY**

STANDARDS - MARKINGS - HOMOLOGATIONS

Conformity to Community Directives:

2006/95/CE: Low Voltage Directive

2006/42/CE: Machinery Directive

- Conformity to Standards:

EN 60204-1 Safety of machinery - Electrical equipment of machines

EN 60204-32 Safety of machinery - Electrical equipment of machines

- Requirements for hoisting machines

EN 60947-1 Low-voltage switchgear and controlgear

EN 60947-5-1 Low-voltage switchgear and controlgear - Control circuit devices and switching elements - Electromechanical control circuit devices

EN 60529 Degrees of protection provided by enclosures

- Regulations for the prevention of accidents BGV C 1 (only for Germany)

- CAN/CSA-C22.2 No 14-10 - Industrial Control Equipment

- UL 508 - Industrial Control Equipment

GENERAL TECHNICAL SPECIFICATIONS

- Storage ambient temperature: $-40^{\circ}\text{C}/+80^{\circ}\text{C}$

- Operational ambient temperature: $-40^{\circ}\text{C}/+80^{\circ}\text{C}$

- Protection degree:



IP 42 or IP 65 or IP 66 / IP 67 / IP 69K depending on the assembly

- Insulation category: Class II

- Maximum rotation speed: 800 rev./min.

- Cable entry: cable clamp M16

- Markings and homologations:

version IP42 or IP65  

version IP 66 / IP 67 / IP 69K    (up to 4 switches)

TECHNICAL SPECIFICATIONS OF THE MICROSWITCHES

- Utilisation category: AC 15 / 3 A / 250 Vac

- Rated thermal current: 10 A

- Rated insulation voltage: 300 Vac

- Mechanical life: 1×10^6 operations

- Connections: 6.3 mm Faston taps or screw-type terminals

- Wires: $1 \times 2.5 \text{ mm}^2$, $2 \times 1.5 \text{ mm}^2$

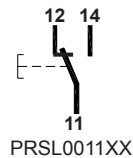
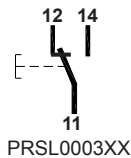
- Markings and homologations:  

The snap action switch PRSL0003XX has 1 NO + 1 NC change over contacts.

The snap action switch PRSL0011XX has 1 NO + 1 NC change over contacts.

All NC contacts are of the positive opening operation type .

The switches have the following reference for internal wiring.

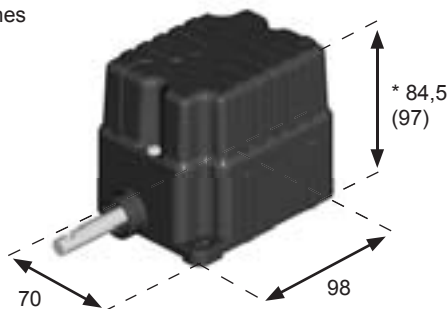


OVERALL DIMENSIONS (MM)

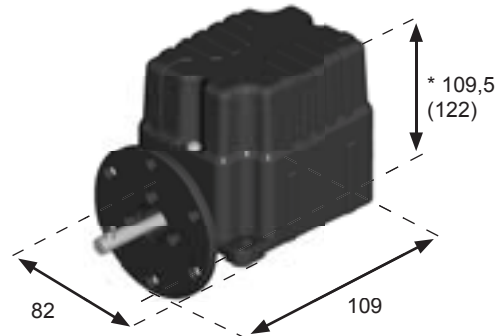
Limit switches with sets of 5 or 6 cams/switches have a special cover: overall dimensions and code numbers are available on request.

IP 42 or IP 65

* 2 switches
() 3-4 switches

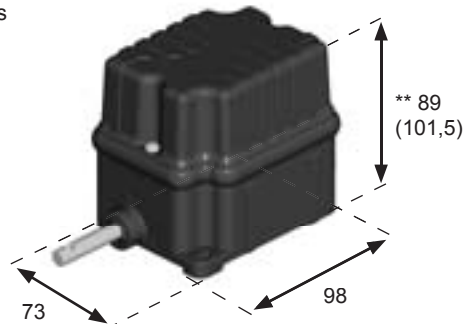


IP 42 or IP65 with flange

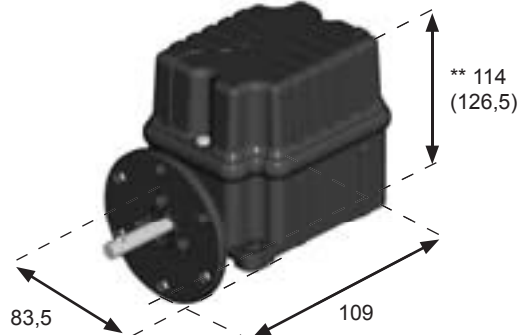


IP 66 / IP 67 / IP 69K

** 2-3 switches
() 4 switches



IP 66 / IP 67 / IP 69K with flange



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TER Tecno Elettrica Ravasi srl

Via Garibaldi 29/31 - 23885 Calco (LC) - Italy

Registered Office - via San Vigilio 2 - 23887 Olgiate Molgora (LC) - Italy

Tel. +39 0399911011 - Fax +39 0399910445 - E-mail: info@terworld.com

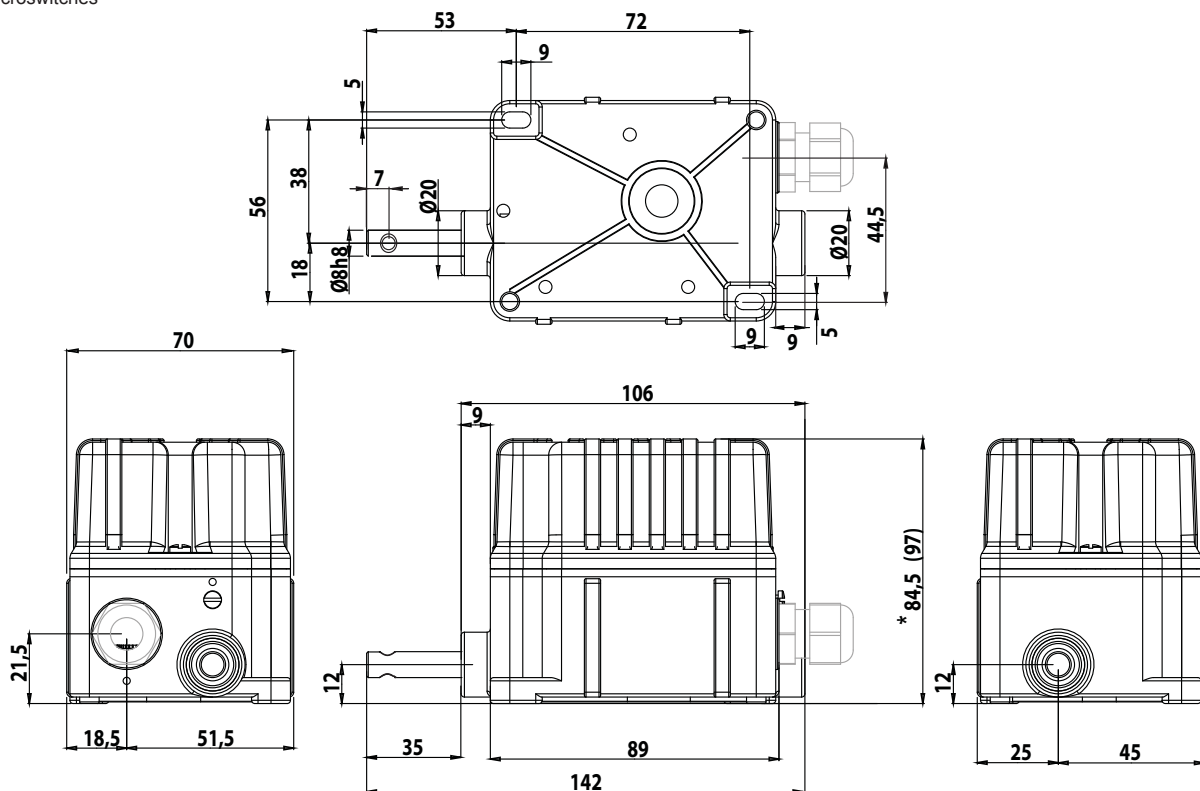
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OVERALL DIMENSIONS (MM)

Limit switches with sets of 5 or 6 cams/switches have a special cover: overall dimensions and code numbers are available on request.

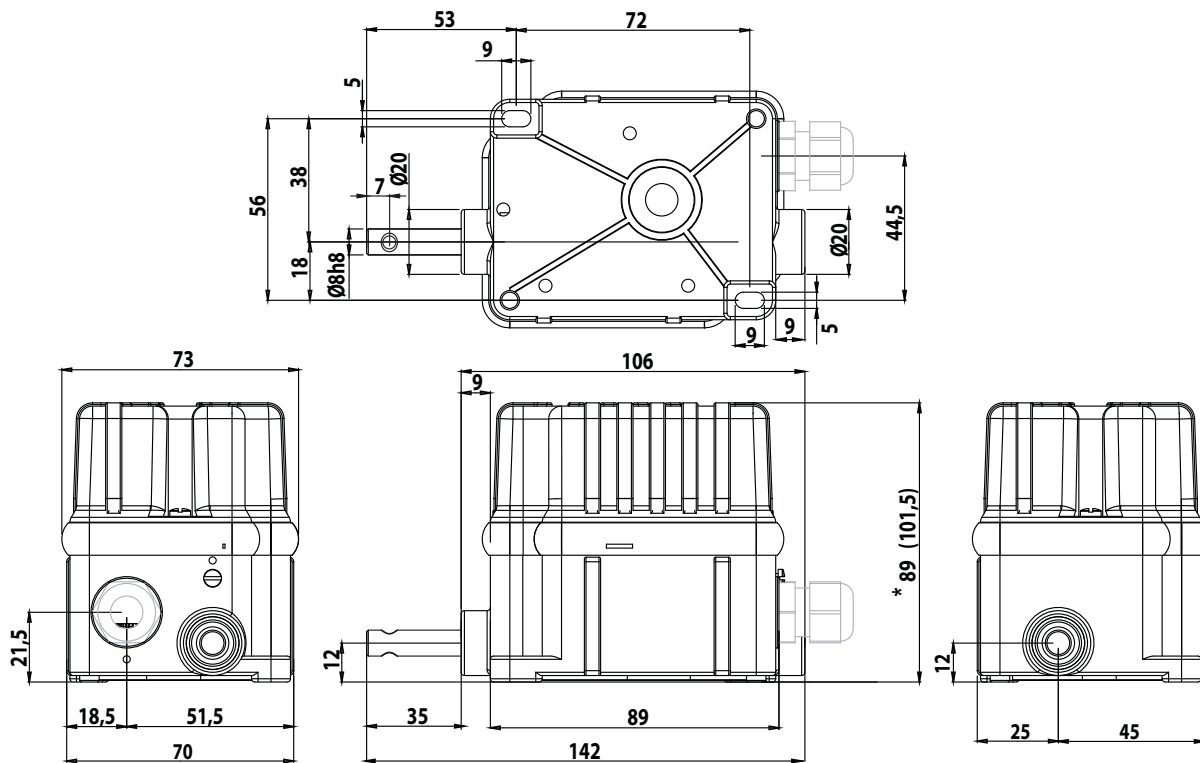
IP 42 OR IP 65

- * 2 microswitches
- () 3-4 microswitches



IP 66 / IP 67 / IP 69K

- * 2-3 microswitches
- () 4 microswitches



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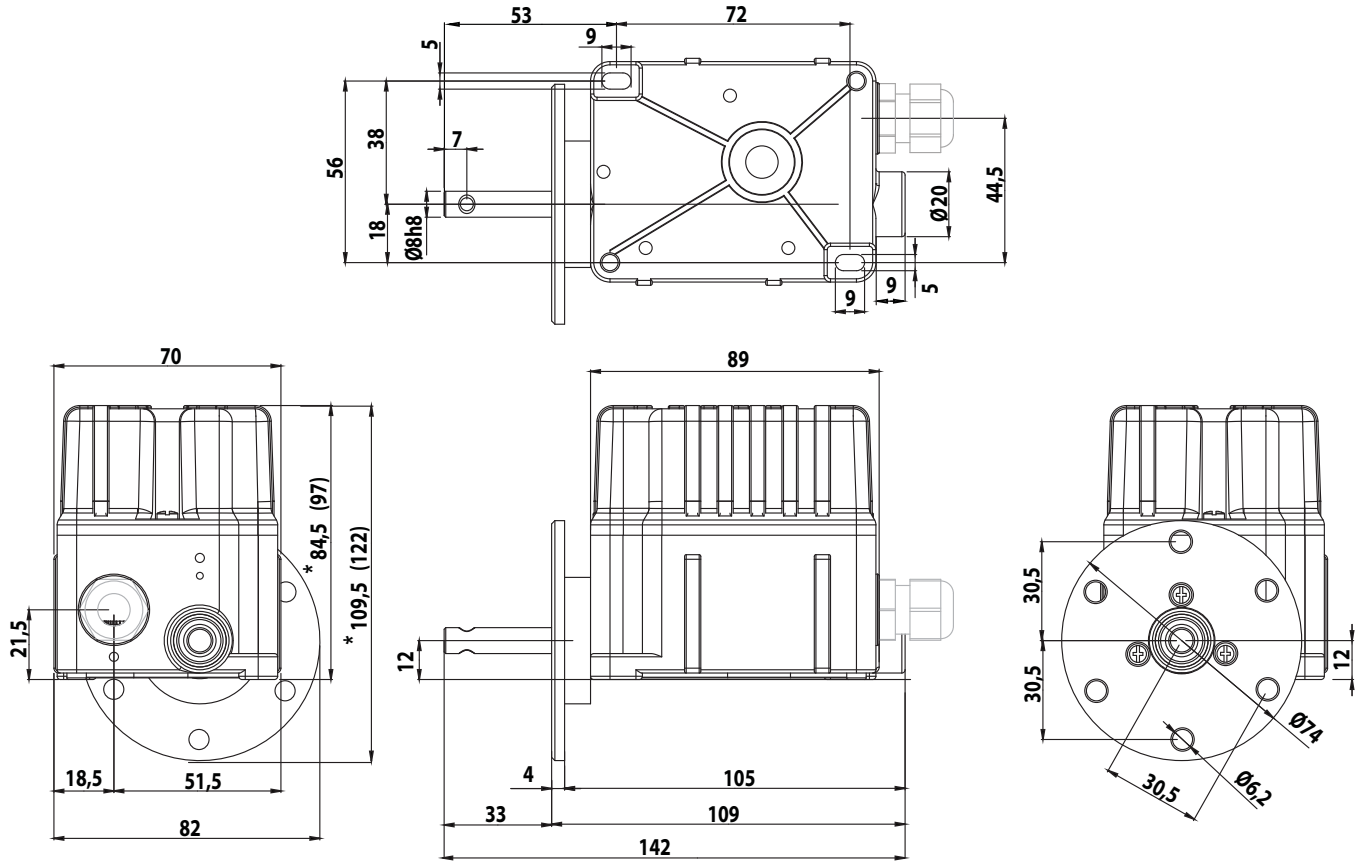
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 Tel. +39 0399911011 - Fax +39 0399910445 - E-mail: info@terworld.com

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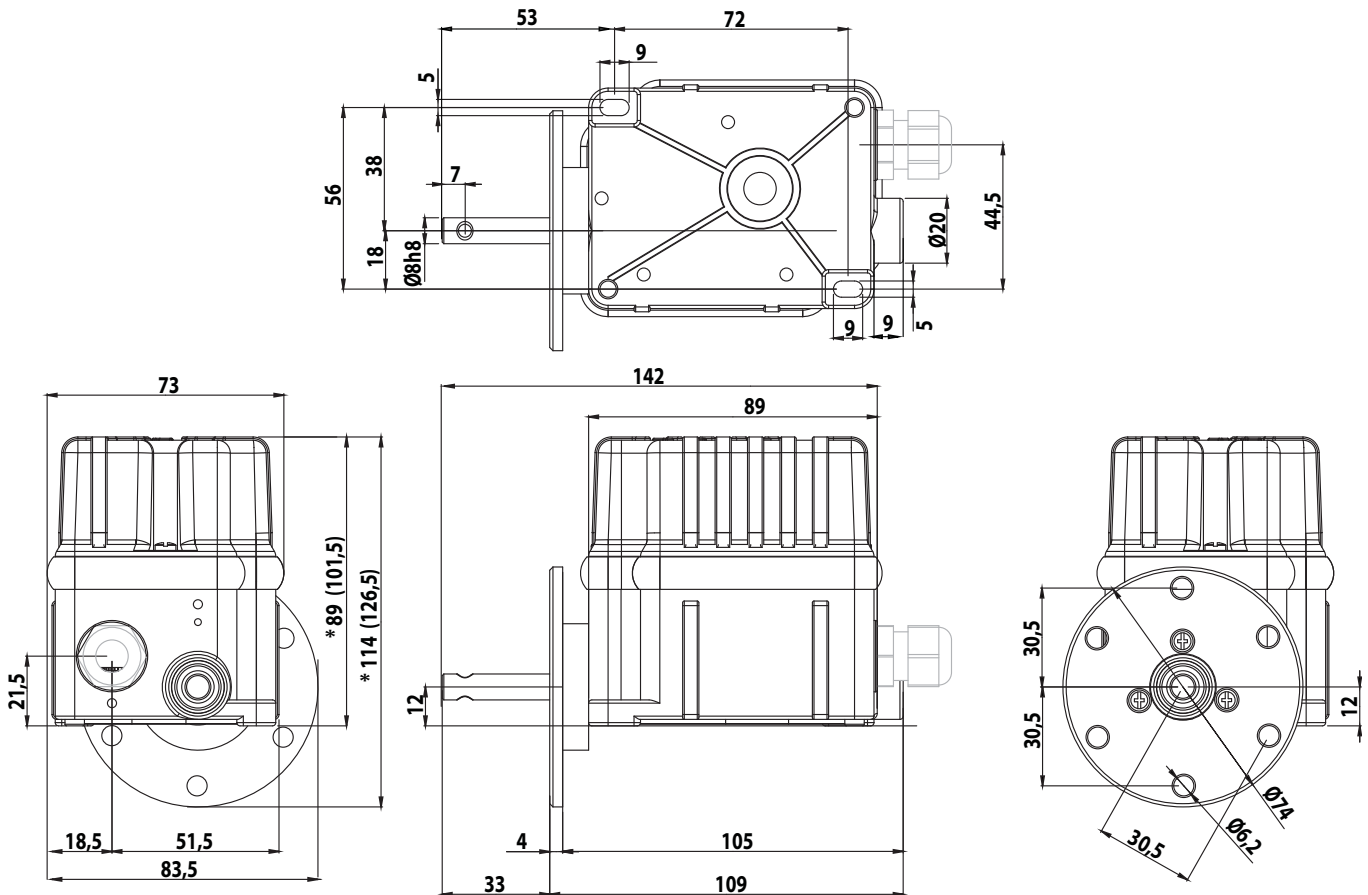
IP 42 OR IP 65 WITH FLANGE

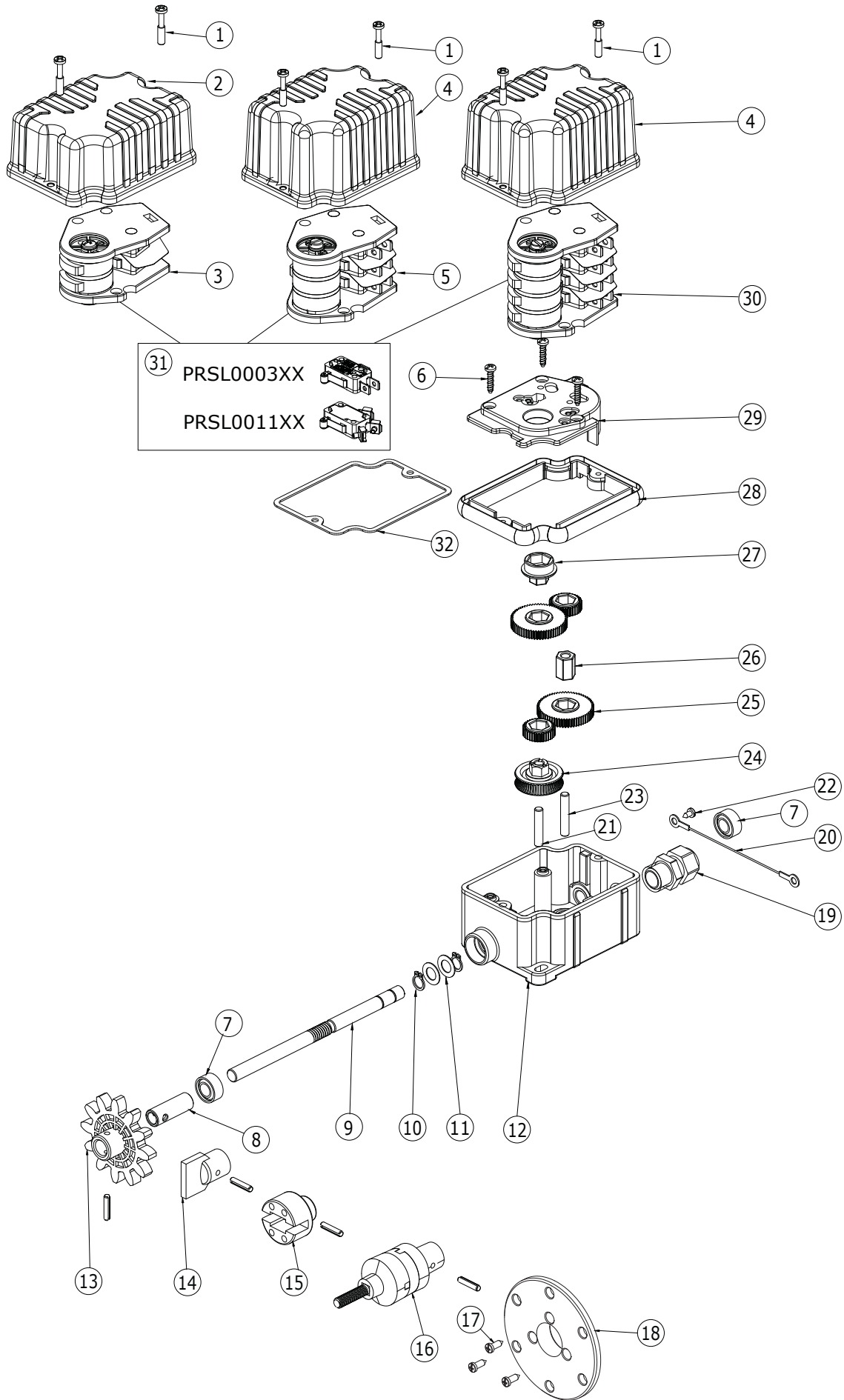
- * 2 microswitches
- () 3-4 microswitches



IP 66 / IP 67 / IP 69K WITH FLANGE

- * 2-3 microswitches
- () 4 microswitches





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
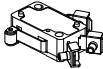

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COMPONENTS






SWITCHES

REF	DRAWING	DESCRIPTION	SCHEME	CODE
31		1NO+1NC change over switch		PRSL0003XX
		1NO+1NC change over switch		PRSL0011XX


STANDARD CAM SETS

REF	DRAWING	NO. AND TYPE OF CAMS	NO. AND TYPE OF SWITCHES	SET CODE
03		2 cams A	2 PRSL0003XX switches	PRFC0008PEC
		2 cams B	2 PRSL0003XX switches	PRFC0009PEC
05		3 cams A	3 PRSL0003XX switches	PRFC0004PEC
		3 cams B	3 PRSL0003XX switches	PRFC0006PEC
30		4 cams A	4 PRSL0003XX switches	PRFC0202PEC
		4 cams B	4 PRSL0003XX switches	PRFC0198PEC


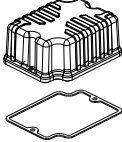
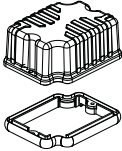

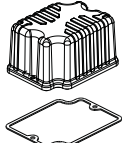
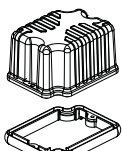
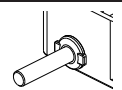
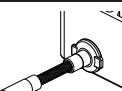
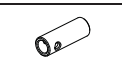
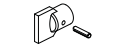

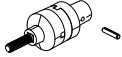
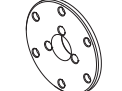

Other sets with 2-3-4-5 or 6 cams/switches available on request

CAM REFERENCE CHART									
CAM		MECHANICAL ANGLE	ELECTRICAL ANGLE	CODE	CAM	MECHANICAL ANGLE	ELECTRICAL ANGLE	CODE	
A		-	-	PRSL7140PI	D		335°	344°	PRSL7143PI
B		60°	78°	PRSL7141PI	E		180°	199°	PRSL7144PI
C		-	-	PRSL7142PI					

PINION GEARS

REF	DRAWING	DESCRIPTION	CODE
13		Pinion gear M10 Z12 with pin	PRSL0911PI
		Pinion gear M12 Z10 with pin	PRSL0912PI
		Pinion gear M14 Z10 with pin	PRSL0913PI
		Pinion gear M16 Z10 with pin	PRSL0914PI
		Pinion gear M20 Z8 with pin	PRSL0915PI
		Pinion gear M5 Z12 with pin	PRSL0916PI
		Pinion gear M6 Z11 with pin	PRSL0917PI
		Pinion gear M8 Z12 with pin	PRSL0918PI
		Pinion gear M12 Z12 with pin	PRSL0944PI

Other pinion gears available: see "Gears and pinion gears" catalog

REF	DRAWING	DESCRIPTION	CODE
02		Cover 2 microswitches (IP 42)	PA090013
02+32		Cover 2 microswitches + gasket (IP 65)	PA090014
02+28		Cover 2-3 microswitches + tightening rubber (IP 66 / IP 67 / IP 69K)	PA090002
04		Cover 3-4 microswitches (IP 42)	PA090012
04+32		Cover 3-4 microswitches + gasket (IP 65)	PA090015
04+28		Cover 4 microswitches + tightening rubber (IP 66 / IP 67 / IP 69K)	PA090003
09		Standard shaft	ALL1R00001
		Flexible shaft	ALL1F00001
08		Bush Ø 8 to Ø 12 for pinion gear / coupling	PRTO1075PE
14		Male coupling with pin	PRSL0919PI
15		Female coupling with pin	PRSL0920PI
16		Coupling with pin	PRSL0981PI
18		Flange	PRTO4040PE
19		Cable clamp M16	PRPS0062PE

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

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STANDARD LIMIT SWITCHES

All sets of cams fitted in the standard limit switches are as follows:

1NO+1NC change over switches PRSL0003XX  and cams PRSL7140PI 

RATED REV. RATIO	REAL REV. RATIO	NUMBER OF CAMS AND SWITCHES	IP 42	IP65	IP66 IP67 IP69K	CODE			
						CE	VERSION		
1 : 15	1 : 15,82	2	x			PFA9142A0015001	-		
					x	PFA9165A0015003	-		
							x	PFA9067A0015001	-
			x			PFA9142A0015003	-		
					x	PFA9165A0015004	-		
							x	PFA9067A0015003	-
		4	x			PFA9142A0015002	-		
					x	PFA9165A0015005	-		
							x	PFA9067A0015002	-
			x			PFA9142A0020001	-		
					x	PFA9165A0020001	-		
							x	PFA9067A0020001	-
1 : 20	1 : 20,37	3	x			PFA9142A0020003	-		
					x	PFA9165A0020003	-		
							x	PFA9067A0020003	-
		4	x			PFA9142A0020002	-		
					x	PFA9165A0020002	-		
							x	PFA9067A0020002	-
1 : 25	1 : 25,96	2	x			PFA9142A0025001	-		
					x	PFA9165A0025004	-		
							x	PFA9067A0025001	-
		3	x			PFA9142A0025003	-		
					x	PFA9165A0025005	-		
							x	PFA9067A0025003	-
4	x			PFA9142A0025002	-				
			x	PFA9165A0025006	-				
					x	PFA9067A0025002	-		
1 : 50	1 : 50	2	x			PFA9142A0050001	-		
					x	PFA9165A0050002	-		
							x	PFA9067A0050001	-
		3	x			PFA9142A0050003	-		
					x	PFA9165A0050003	-		
							x	PFA9067A0050003	-
4	x			PFA9142A0050002	-				
			x	PFA9165A0050004	-				
					x	PFA9067A0050002	-		
1 : 75	1 : 75	2	x			PFA9142A0075001	-		
					x	PFA9165A0075001	-		
							x	PFA9067A0075001	-
		3	x			PFA9142A0075003	-		
					x	PFA9165A0075003	-		
							x	PFA9067A0075003	-
4	x			PFA9142A0075002	-				
			x	PFA9165A0075002	-				
					x	PFA9067A0075002	-		

REQUEST FORM FOR BASE NON STANDARD LIMIT SWITCHES

Version

- IP00 (without cover)
- IP42
- IP65
- IP66 / IP67 / IP69K (with tightening rubber)
 (up to 4 switches)
- IP66 / IP67 / IP69K (with tightening rubber)
 (5-6 switches)

Cam set

Standard cam set *	Customised cam set *												
<input type="checkbox"/>	<table border="0"> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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CAMS SWITCHES

* Mark the number corresponding to the cam set required, if standard; otherwise mark the letters corresponding to the single cams and switches required.

Standard cam sets

(only with switches PRSL0003XX)

Code	Cams
<input type="checkbox"/> 1 PRFC0008PEC	<input type="checkbox"/> A <input type="checkbox"/> A
<input type="checkbox"/> 2 PRFC0009PEC	<input type="checkbox"/> B <input type="checkbox"/> B
<input type="checkbox"/> 3 PRFC0004PEC	<input type="checkbox"/> A <input type="checkbox"/> A <input type="checkbox"/> A
<input type="checkbox"/> 4 PRFC0006PEC	<input type="checkbox"/> B <input type="checkbox"/> B <input type="checkbox"/> B
<input type="checkbox"/> 5 PRFC0202PEC	<input type="checkbox"/> A <input type="checkbox"/> A <input type="checkbox"/> A <input type="checkbox"/> A
<input type="checkbox"/> 6 PRFC0198PEC	<input type="checkbox"/> B <input type="checkbox"/> B <input type="checkbox"/> B <input type="checkbox"/> B

Cams

- | | |
|------------------------------------|------------|
| <input type="checkbox"/> A | PRSL7140PI |
| <input type="checkbox"/> B (60°) | PRSL7141PI |
| <input type="checkbox"/> C | PRSL7142PI |
| <input type="checkbox"/> D (335°) | PRSL7143PI |
| <input type="checkbox"/> E (380°) | PRSL7144PI |

(Degrees correspond to mechanical angle)

Switches

- PRSL0003XX
- PRSL0011XX

Revolution ratio

- | | |
|-------------------------------|--|
| <input type="checkbox"/> 1:15 | <input type="checkbox"/> 1:75 |
| <input type="checkbox"/> 1:20 | <input type="checkbox"/> 1:100 |
| <input type="checkbox"/> 1:25 | <input type="checkbox"/> 1:150 |
| <input type="checkbox"/> 1:50 | <input type="checkbox"/> 1: <input type="text"/> |

Standard shaft

Flexible shaft

Flange

Male coupling

Female coupling

Coupling

Pinion gear

- | | |
|-------------------------------------|---|
| <input type="checkbox"/> PRSL0911PI | M10 Z12 |
| <input type="checkbox"/> PRSL0912PI | M12 Z10 |
| <input type="checkbox"/> PRSL0913PI | M14 Z10 |
| <input type="checkbox"/> PRSL0914PI | M16 Z10 |
| <input type="checkbox"/> PRSL0915PI | M20 Z8 |
| <input type="checkbox"/> PRSL0916PI | M5 Z12 |
| <input type="checkbox"/> PRSL0917PI | M6 Z11 |
| <input type="checkbox"/> PRSL0918PI | M8 Z12 |
| <input type="checkbox"/> PRSL0944PI | M12 Z12 |
| <input type="checkbox"/> Customised | M <input type="text"/> Z <input type="text"/> |

Remarks

Base rotary limit switch is an electromechanical device for low voltage control circuits (EN 60947-1, EN 60947-5-1) to be used as electrical equipment on machines (EN 60204-1) in compliance with the fundamental requirements of the Low Voltage Directive 2006/95/CE and of the Machine Directive 2006/42/CE.

The limit switch is designed for use in industrial environments under even severe climatic conditions (operational temperature from -40°C to $+80^{\circ}\text{C}$, suitable for use in tropical environment). The equipment is not suitable for use in environments with potentially explosive atmosphere, corrosive agents or a high percentage of sodium chloride (saline fog). Oils, acids or solvents may damage the equipment. Do not connect more than one phase to each switch. Do not oil or grease the control elements or the switches.

The installation of the limit switch shall be carried out by expert and trained personnel. Wiring shall be properly done according to the current instructions.

Prior to the installation and the maintenance of the limit switch, the main power of the machinery shall be turned off.

Steps for the proper installation of the limit switch

- Loosen the fixing screw (4) and remove the cover (3)
- Connect the limit switch shaft (2) to the reduction gear shaft avoiding any misalignment between the two shafts
- Fix the limit switch firmly in place to prevent abnormal vibrations of the equipment during operation; use only the fixing holes on the base (1) to fix the equipment
- Insert the cable into the limit switch through the cable clamp (5)
- Strip the cable to a length suitable for wiring the switches
- Tape the stripped part of the cable
- Clamp the wire into the cable clamp (5)
- Connect the switches according to the contact scheme printed on the switches or to the wiring scheme on the back of the instructions (use 6.3 mm Faston taps)
- Adjust the operating point of the cams; for proper adjustment, loosen the central screw (7) of the cam set, adjust the operating point of each single cam by turning its screw (8) (the numbers on the screws refer to the cams counting from bottom to top), then tighten the central screw (7)
- Insert the free end of the no-drop wire (9) into one of the screws (4), then close the limit switch using the screws (4); check the proper positioning of the rubber (6) in the cover (3) and tighten the screws (4) with a torque of 80/100 cNm

Periodic maintenance steps

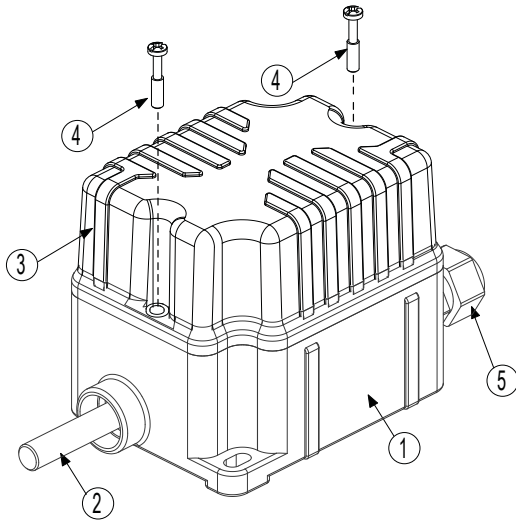
- Check the proper tightening of the screws (4) and cover (3)
- Check the proper tightening of the central screw (7) holding the cams
- Check the wiring conditions (in particular where wires clamp into the switch)
- Check the conditions of the rubber (6) fit between the cover (3) and the base (1) and check the tightening of the cable clamp (5) around the cable
- Check that the limit switch enclosure (1, 3) is not broken
- Check the alignment between the limit switch shaft (2) and the reduction gear shaft
- Check that the limit switch is properly fixed
- If there is an anti-moisture plug, check its conditions

In case any component of the limit switch is modified, the validity of the markings and the guarantee on the equipment are annulled. Should any component need replacement, use original spare parts only.

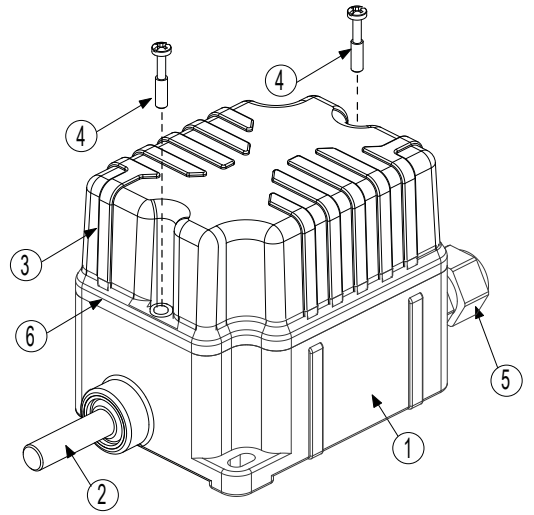
TER declines all responsibility for damages caused by the improper use or installation of the equipment.



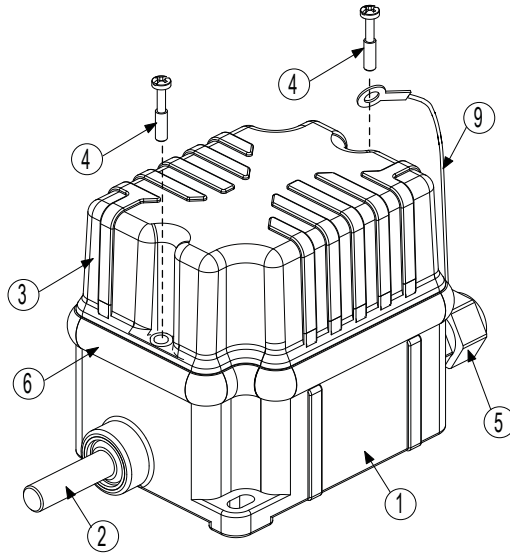
IP 42



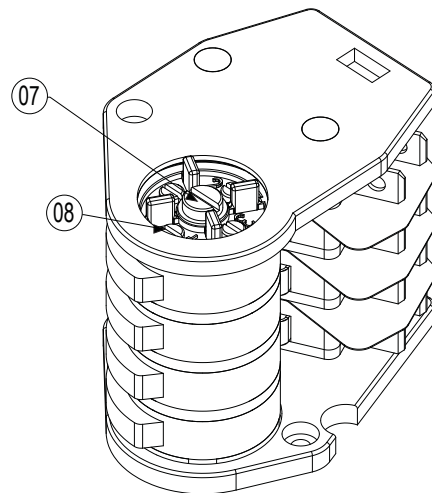
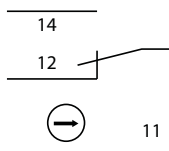
IP 65



IP 66 / IP 67 / IP 69K



Wiring Layout Switches



*Image for illustrative purpose
the Number and type of cams is different
according to the model*

