FOX ATEX

HAZARDOUS AREAS
Rotary limit switch

Rotary limit switch used to control and measure the movement of industrial machines in areas with potentially explosive atmospheres.

FEATURES

- It consists of a gear motor that transfers movement to the cams and to the other movement detection devices through a primary input reduction stage (worm gear and helical toothed gear) and one or more secondary output stages (pairs of straight toothed gears).
- Accurate adjustment of cams by means of screws.
- Positive opening NC contacts for safety functions.
- Mechanical life of switches: up to 10 million operations.
- IP protection degree: Fox Atex is classified IP 65 / IP 69 or IP 65 / IP 69K (in the version with the stailess-steel cage).
- Extreme temperature resistance: from -25°C to +75°C.
- Featuring polyamide 66 (PA66) housing and EPM gasket, ensuring an IP 65 / IP 69 degree of protection against dust.
- Suitable for use in potentially explosive environments (Category II 3D (Zone 22)) in the version with the stainless-steel cage and in the version without the cage with protection at the customer's responsibility.
- It features transmission and gear driving shafts made of stainless steel AISI 430F or AISI 303, worm gear transmission shaft rotating on ball bearings, self-lubricating technopolymer gears and driving bushes, technopolymer base and cover.
- All materials and components used are wear resistant and guarantee protection of the unit against water and dust.

OPTIONS

- Revolution ratios from 1:3 to 1:2870, achieved by combining different secondary output stages.
- Snap action switches with 1NO+1NC contacts or slow action switches with 1NC contact.
- It can be equipped with a cam set (with up to 4 switches).
- Dedicated cable glands or connectors.
- Available with flanges, pinion gears and couplings.
- Plates with universal adapters to replace existing systems.

CERTIFICATIONS

- CE Marking.
- Atex Certification EN
- Compliance with IEC

Fill in the "request form" for accurate product configuration.

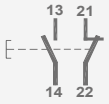
CERTIFICATIONS

Conformity to Community Directives	2014/35/UE Low Voltage Directive
	2006/42/CE Machinery Directive
	2014/34/UE Atex Directive
Conformity to CE Standards	EN 60204-1 Safety of machinery - Electrical equipment of machines
	EN 60947-1 Low-voltage switchgear and controlgear
	EN60947-5-1 Low-voltage switchgear and controlgear - Control circuit devices and switching elements - Electromechanical control circuit devices
	EN 60529 Degrees of protection provided by enclosures
Conformity to IEC Standards	IEC 60079-31:2014 Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure 't
	IEC 60079-0:2018+COR1:2020 Explosive atmospheres – Part 0: Equipment – General requirements
	IEC 60529:1989+AMD2:2013+COR1:2019 Degrees of protection provided by enclosures (IP Code)
	IEC 60079-14 Explosive atmospheres – Part 14: Electrical installations design, selection and erection
	IEC 60079-17 Explosive atmospheres – Part 17: Electrical installations inspection and maintenance
	IEC 60079-19 Explosive atmospheres – Part 19: Equipment repair, overhaul and reclamation
	EN ISO/IEC 80079-34:2018 Explosive atmospheres – Part 34: Application of quality management systems for Ex product manufacture
Type of protection	Ex tc IIIC T100°C Dc IP69 / IP69K
Markings and homologations	CE Ex IEC

GENERAL TECHNICAL SPECIFICATIONS

Version	**With the cage**	**Without the cage**
Ambient temperature	Storage -25°C/+75°C	
	Operational -25°C/+75°C	
ATEX Category	II 3D (zone 22)	II 3D (zone 22) (with protection at the customer's responsibility)
Protection	Ex tc	
IP protection degree	IP 65 / IP 69K	IP 65 / IP 69
Insulation category	Class II	
Rotation speed	Revolution ratios ≥1:16: max. 800 rpm	
	Revolution ratios <1:16: max. 200 rpm	
	Revolution ratios =1:50 and 1:100: max. 1500 rpm	
Cable entry	Cable gland M20	
	Cable gland M20+M16	
	Cable gland M20+M20	
Shafts	Stainless steel AISI 430F	
	Stainless steel AISI 303	

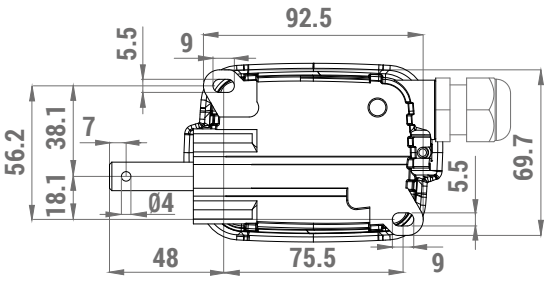
TECHNICAL SPECIFICATIONS OF THE SWITCHES

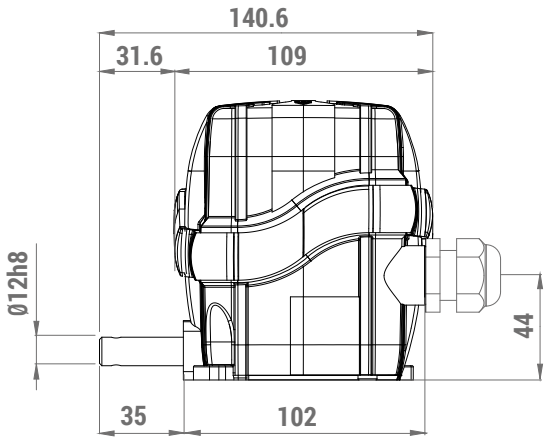
Code	PRSL0110XX	PRSL0111XX
Utilisation category	AC 15	
Rated operational voltage	250 Vac	
Rated operational current	3 A	
Rated thermal current	10 A	
Rated insulation voltage	300 Vac	
Mechanical life	$10x10^6$ operations	
Connections	Screw-type terminals	
Wires	1x2.5 mm^2, 2x1.5 mm^2 (UL (c)UL: use 60°C or 75°C copper (CU) conductors and stiff or flexible wire 14-22 AWG)	
Tightening torque	0.5 Nm	
Microswitch type	Double break. snap action	Double break. slow action
Contacts	1NO+1NC (All NC contacts are of the positive opening operation type ⊖)	1NC (All NC contacts are of the positive opening operation type ⊖)
Scheme		
Markings and homologations	CE cULus	

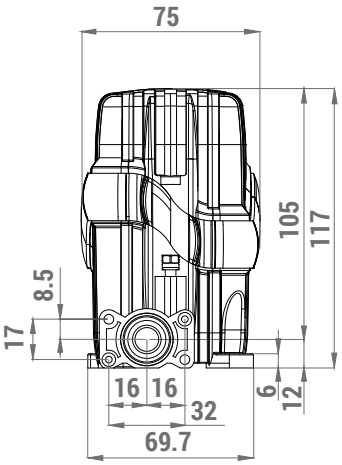
Switches PRSL0100XX available on request.

OVERALL DIMENSIONS (mm)

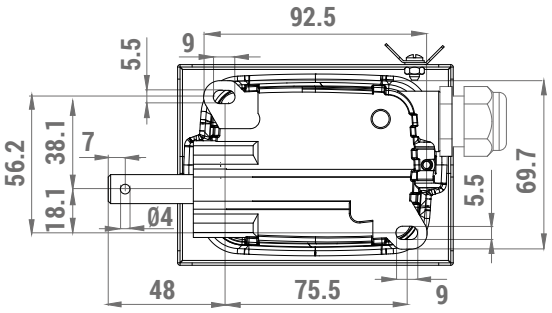
Version with the cage

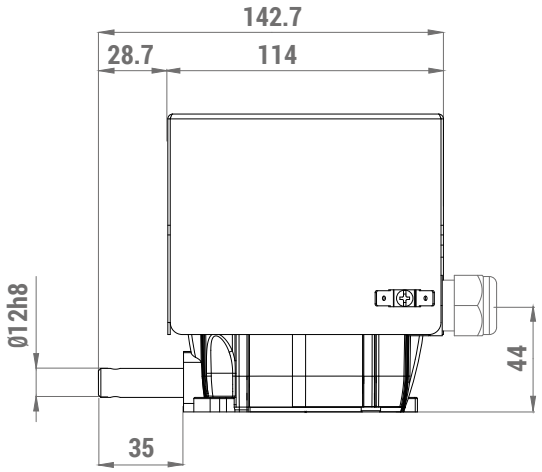


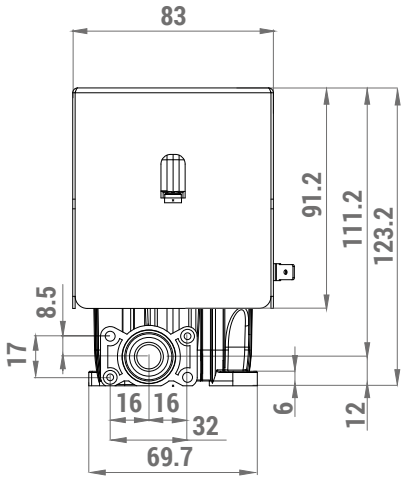




Version without the cage





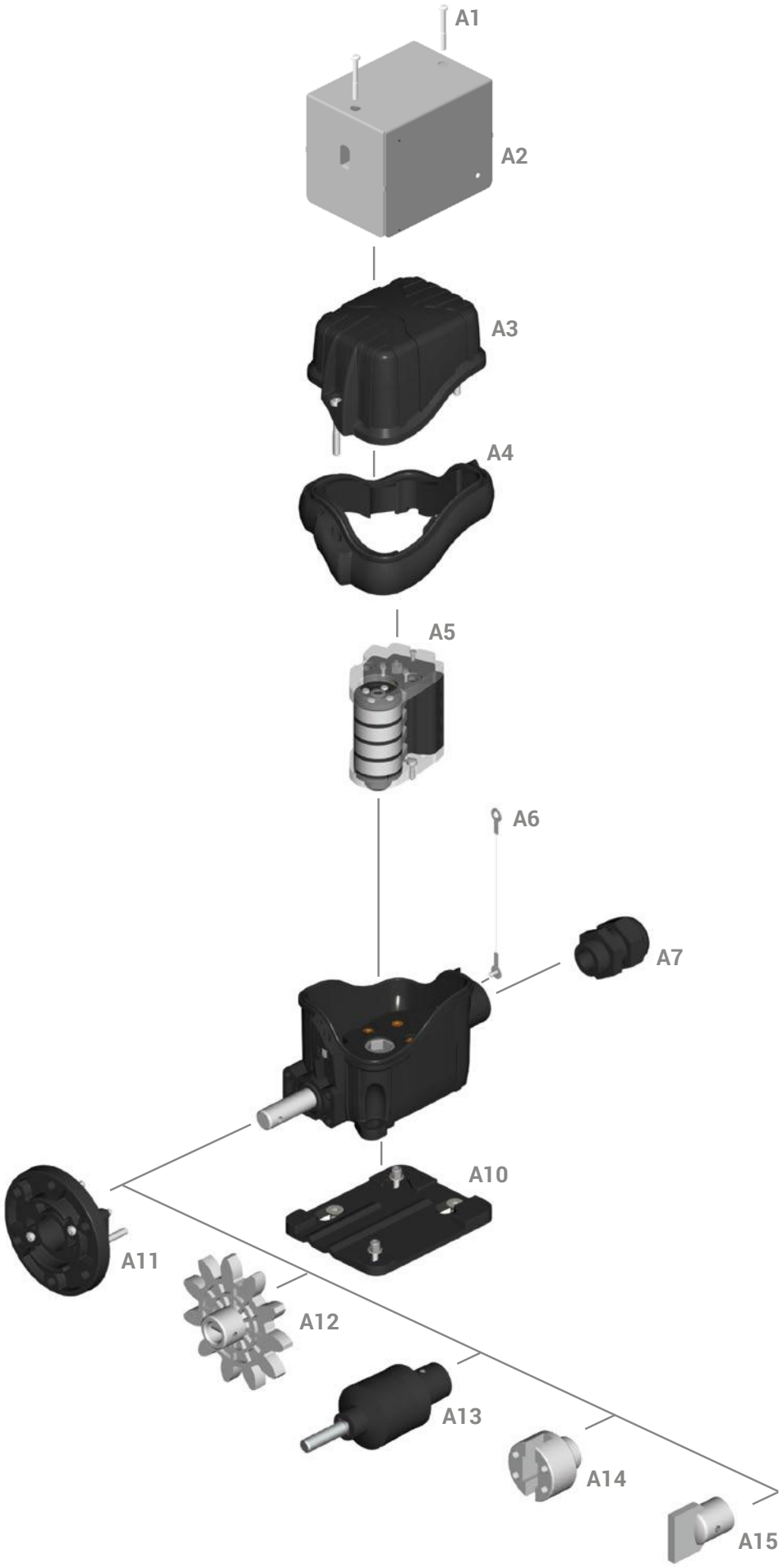


STANDARD LIMIT SWITCHES

Standard limit switches are equipped with cams PRSL7194PI and shafts made of stainless steel AISI 430F.

Rated revolution ratio	Real revolution ratio	No. of cams and switches	Switches	
			PRSL0110XX 1NO+1NC 	PRSL0111XX 1NC 
			Code	Code
1:25	1:27.27	4	EXB9067L0027014N	EXB9067L0027019N
1:50	1:62	4	EXB9067L0062003N	EXB9067L0062025N
1:100	1:103.44	4	EXB9067L0103030N	EXB9067L0103050N

ASSEMBLY DRAWING



Refer to the following tables for descriptions of components: “Standard cam sets”, “Potentiometers, encoders and sensors” and “Accessories”.

COMPONENTS

Standard cam sets

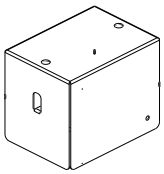
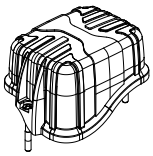
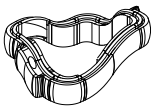
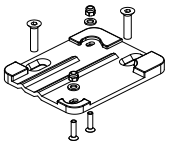
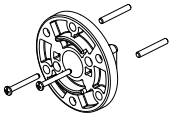
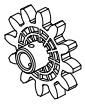
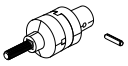
Ref.	Drawing	No. and type of cams	No. and type of switches	Code
A5		2 cams A	2 PRSL0110XX switches	FCL20001
		2 cams A	2 PRSL0111XX switches	FCL20002
		Cams A+C	2 PRSL0110XX switches	FCL20003
		Cams A+C	2 PRSL0111XX switches	FCL20004
		2 cams C	2 PRSL0110XX switches	FCL20005
		2 cams C	2 PRSL0111XX switches	FCL20006
		Cams D+D+B+F	4 PRSL0110XX switches	FCL40001
		Cams D+D+B+F	4 PRSL0111XX switches	FCL40002
		4 cams A	4 PRSL0110XX switches	FCL40003
		4 cams A	4 PRSL0111XX switches	FCL40004
		Cams A+A+C+C	4 PRSL0110XX switches	FCL40005
		Cams A+A+C+C	4 PRSL0111XX switches	FCL40006
		4 cams C	4 PRSL0110XX switches	FCL40007
		4 cams C	4 PRSL0111XX switches	FCL40008
		Cams C+C+C+E	4 PRSL0110XX switches	FCL40009
		Cams C+C+C+E	4 PRSL0111XX switches	FCL40010
		Cams A+A+E+E	4 PRSL0110XX switches	FCL40011
		Cams A+A+E+E	4 PRSL0111XX switches	FCL40012

Other sets with 2/3 or 4 cams/switches are available on request.

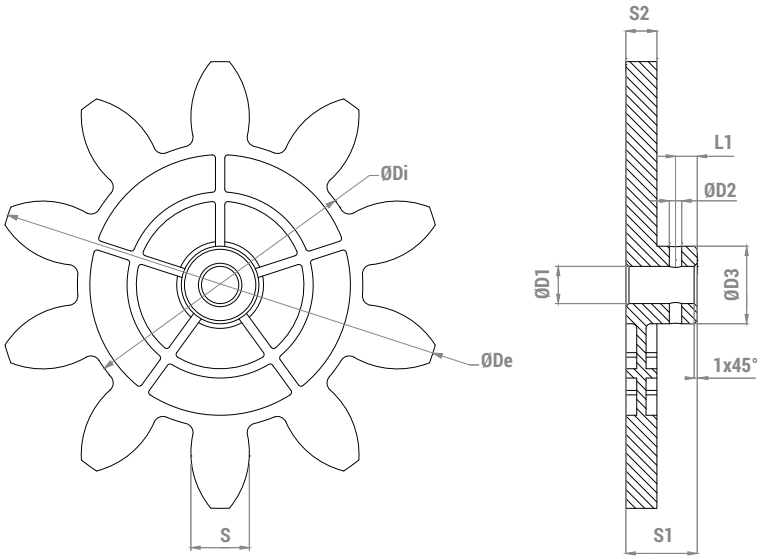
Cam reference chart

Cam		Cam code for PRSL0110XX switch	Switching angle with PRSL0110XX	Cam code for PRSL0111XX switch	Switching angle with PRSL0111XX
A	1 point	PRSL7194PI	21.5° ±0.5°	PRSL7194PI	23.0° ±0.5°
B	10 points	PRSL7193PI	21.5° ±0.5°	PRSL7193PI	23.0° ±0.5°
C	60° sector	PRSL7195PI	82.0° ±0.5°	PRSL7195PI	86.0° ±0.5°
D	72° sector	PRSL7196PI	94.0° ±0.5°	PRSL7196PI	97.5° ±0.5°
E	180° sector	PRSL7191PI	204.5° ±0.5°	PRSL7191PI	203.0° ±0.5°
F	305° sector	PRSL7192PI	328.5° ±0.5°	PRSL7192PI	327.0° ±0.5°

Accessories

Ref.	Drawing	Description	Code
A1		Screw for	VI100009
A2		Cage	PRVV0021PE
A3		Cover with screws	PA090021
A4		Tightening rubber	PRGU1501PE
A6		Cover holding wire + screw (bag with 10 pieces)	PRSL0358PI
A7		Cable gland M20	PSM20P150X01
A10		Fixing plate	PRSL0430PI
A11		Flange with screws and pins	PRSL0356PI
A12		Pinion gear	Vedere tabelle pignoni
A13		Coupling with pin	PRSL0981PI
A14		Female coupling with pin	PRSL0920PI
A15		Male coupling with pin	PRSL0919PI

Moulded pinion gears

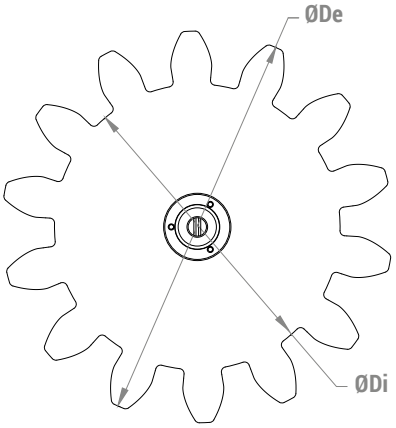


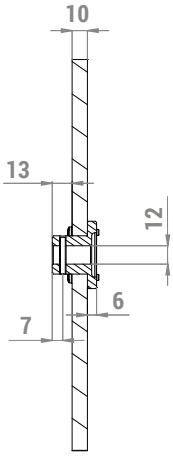
Legend	
Z	Number of teeth
M	Module
Dp	Primitive diameter
De	External diameter
Di	Internal diameter
a	Addendum
d	Dedendum
Alpha	Pressure angle

Code	Z	M	Dp	De	Di	a	d	S	Alpha	D1	D2	D3	S1	S2	L1
PRSL0915PI	8	20.00	160.00	200.00	113.20	20.00	23.40	31.41	20.00	12.00	4.00	24.00	23.00	10.00	7.00
PRSL0912PI	10	12.00	120.00	144.00	92.00	12.00	14.00	18.85	20.00	12.00	4.00	25.00	23.00	10.00	7.00
PRSL0913PI	10	14.00	140.00	168.00	107.24	14.00	16.38	21.99	20.00	12.00	4.00	24.60	23.00	10.00	7.00
PRSL0914PI	10	16.00	160.00	192.00	122.67	16.00	18.67	25.13	20.00	12.00	4.00	24.00	23.00	10.00	7.00
PRSL0917PI	11	6.00	66.00	78.00	51.96	6.00	7.02	9.42	20.00	12.00	4.00	19.00	23.00	8.00	7.00
PRSL0916PI	12	5.00	60.00	70.00	48.30	5.00	5.83	7.85	20.00	12.00	4.00	20.00	23.00	8.00	7.00
PRSL0918PI	12	8.00	96.00	112.00	77.28	8.00	9.36	12.56	20.00	12.00	4.00	21.50	23.50	10.00	7.00
PRSL0911PI	12	10.00	120.00	140.00	96.67	10.00	11.67	15.71	20.00	12.00	4.00	25.00	23.50	10.00	7.00
PRSL0944PI	12	12.00	144.00	168.00	116.00	12.00	14.00	18.85	20.00	12.00	4.00	24.00	23.00	10.00	7.00

Measuring unit: mm.

Waterjet cut pinion gears





Legend	
Z	Number of teeth
M	Module
Dp	Primitive diameter
De	External diameter
Di	Internal diameter
a	Addendum
d	Dedendum
Alpha	Pressure angle

Code	Z	M	Dp	De	Di	a	d	Alpha
PRSL0857PI	8	18.00	144.00	180.00	102.00	18.00	21.00	20.00
PRSL0855PI	8	24.00	192.00	240.00	136.00	24.00	28.00	20.00
PRSL0992PI	9	10.00	90.00	110.00	66.67	10.00	11.67	20.00
PRSL0879PI	9	16.00	144.00	176.00	106.67	16.00	18.67	20.00
PRSL0854PI	9	18.00	162.00	198.00	120.00	18.00	21.00	20.00
PRSL0871PI	9	20.00	180.00	220.00	133.33	20.00	23.33	20.00
PRSL0849PI	9	24.00	216.00	264.00	160.00	24.00	28.00	20.00
PRSL0846PI	10	10.00	100.00	120.00	76.67	10.00	11.67	20.00
PRSL0993PI	10	18.00	180.00	216.00	138.00	18.00	21.00	20.00
PRSL0970PI	10	22.00	220.00	264.00	168.52	22.00	25.74	20.00
PRSL0856PI	10	24.00	240.00	288.00	184.00	24.00	28.00	20.00
PRSL0861PI	11	12.00	132.00	156.00	104.00	12.00	14.00	20.00
PRSL0998PI	11	18.00	198.00	234.00	156.00	18.00	21.00	20.00
PRSL0997PI	11	20.00	220.00	260.00	173.36	20.00	23.32	20.00
PRSL0859PI	11	24.00	264.00	312.00	204.00	24.00	30.00	20.00
PRSL0863PI	12	14.00	168.00	196.00	133.00	14.00	17.50	20.00
PRSL0897PI	12	16.00	192.00	224.00	154.67	16.00	18.67	20.00
PRSL0972PI	12	18.00	216.00	252.00	173.88	18.00	21.06	20.00
PRSL0845PI	12	20.00	240.00	280.00	193.34	20.00	23.32	20.00
PRSL0878PI	12	24.00	288.00	336.00	232.00	24.00	28.00	20.00
PRSL0860PI	13	6.00	78.00	90.00	63.00	6.00	7.50	20.00
PRSL0853PI	13	12.00	156.00	178.59	126.00	11.29	15.00	20.00
PRSL0898PI	13	16.00	208.00	240.00	170.67	16.00	18.66	20.00
PRSL0862PI	14	10.00	140.00	169.00	125.00	15.00	7.50	20.00
PRSL0896PI	14	16.00	224.00	256.00	186.67	16.00	18.67	20.00
PRSL0999PI	14	18.00	252.00	288.00	210.00	18.00	21.00	20.00
PRSL0848PI	14	20.00	280.00	320.00	233.33	20.00	23.33	20.00
PRSL0858PI	15	18.00	270.00	306.00	228.00	18.00	21.00	20.00
PRSL0847PI	16	20.00	320.00	360.00	273.33	20.00	23.33	20.00
PRSL0973PI	17	10.00	170.00	190.00	145.00	10.00	12.50	22.89
PRSL0974PI	17	14.00	238.00	266.00	203.00	14.00	17.50	22.89
PRSL0851PI	20	6.00	120.00	132.00	105.00	6.00	7.50	22.89

Measuring unit: mm.

FOX ATEX - REQUEST FORM FOR LIMIT SWITCH

Instructions

See next page for list of components and legends)

1. **Version**: tick the required version.
2. **Revolution ratio**: write the required revolution ratio.
3. **Standard cam set**: write the code of the cam set required, according to the legend.
4. **Customized cam set**: for non standard cam sets, fill in the scheme choosing the cams and the switches required, according to the legends. It is possible to assemble sets with 2, 3 or 4 cams/switches.

   Customized cams are available on request.
5. **Coupling, flange, pinion gear**: tick the appropriate box when coupling, flange or pinion gear are required.

   When a standard pinion gear is required, write the code number listed in the pinion gear tables in the catalogue.

   When a special pinion gear is required, write the number of teeth, the module and the primitive diameter.
6. **Shaft**: tick the type of shaft required.

   Customized shafts are available on request.
7. **Cover holding wire:** tick when the cover holding wire is required.

Version 1

☐ Version with the cage

☐ Version without the cage

Revolution ratio 2

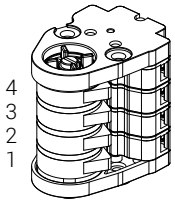
☐ 1:15	☐ 1:150
☐ 1:20	☐ 1:200
☐ 1:25	☐ 1:250
☐ 1:50	☐ 1:300
☐ 1:75	☐ 1:450
☐ 1:100	☐ 1: ____

Standard cam set 3

Cam set code

_____

Customized cam set 4



Cam code	Switch code
4 _____	_____
3 _____	_____
2 _____	_____
1 _____	_____

5 Coupling

☐ **Male coupling** ☐ **Flange**

☐ **Female coupling** ☐

☐ **Pinion gear**

Pinion gear code _____

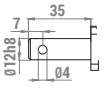
Customized pinion gear

No. of teeth _____

Module _____

Primitive diameter _____

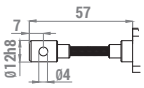
Standard shaft 6



☐ Stainless steel AISI 430F shaft

☐ High resistance stainless steel AISI 303 shaft

Flexible shaft



☐ Stainless steel AISI 430F shaft

☐ High resistance stainless steel AISI 303 shaft

Cover holding wire 7

☐

3 Legend - Standard cam sets

No. & type of switches	No. & type of cams	Cam set code
2 x PRSL0110XX	2 cams A	FCL20001
	Cams A+C	FCL20003
	2 cams C	FCL20005
4 x PRSL0110XX	Cams D+D+B+F	FCL40001
	4 cams A	FCL40003
	Cams A+A+C+C	FCL40005
	4 cams C	FCL40007
	Cams C+C+C+E	FCL40009
	Cams A+A+E+E	FCL40011
2 x PRSL0111XX	2 cams A	FCL20002
	Cams A+C	FCL20004
	2 cams C	FCL20006
4 x PRSL0111XX	Cams D+D+B+F	FCL40002
	4 cams A	FCL40004
	Cams A+A+C+C	FCL40006
	4 cams C	FCL40008
	Cams C+C+C+E	FCL40010
	Cams A+A+E+E	FCL40012

4 Legend - Switches

PRSL0110XX	PRSL0111XX
1NO+1NC	1NC
	

4 Legend - Cams

Cam			Cam code for PRSL0110XX switch	Switching angle with PRSL0110XX	Cam code for PRSL0111XX switch	Switching angle with PRSL0111XX
A		1 point	PRSL7194PI	21.5° ±0.5°	PRSL7194PI	23.0° ±0.5°
B		10 points	PRSL7193PI	21.5° ±0.5°	PRSL7193PI	23.0° ±0.5°
C		60° sector	PRSL7195PI	82.0° ±0.5°	PRSL7195PI	86.0° ±0.5°
D		72° sector	PRSL7196PI	94.0° ±0.5°	PRSL7196PI	97.5° ±0.5°
E		180° sector	PRSL7191PI	204.5° ±0.5°	PRSL7191PI	203.0° ±0.5°
F		305° sector	PRSL7192PI	328.5° ±0.5°	PRSL7192PI	327.0° ±0.5°