

## DESCRIPTION

Magnetic sensors series "FM" allow to detect the magnetic piston position inside the cylinders. The magnetic field generated by the magnet is used to signal electrical circuits as required. It's possible to choose between two types of switches:

- Reed switch (electromechanical switch that can work with both AC or DC circuits)
- Magnetoresistive (electronic switch suitable for DC circuit only).

Magnetic sensors have a LED that signals the insertion as standard and the type "FM100/EX" comply with ATEX directive, categories 1GD and 3GD.

## WARNINGS

The magnetic sensor is a switch that has to be assembled in series with a load (inductive, resistive or capacitive). Use the shortest possible connection cable to reduce self-capacitance to a minimum. In borderline cases, measures should be taken to cancel the effect of cable capacitance using a repetition relay (4 W) in series. Avoid close proximity to external magnetic fields such as electric motors or large iron masses, as they could affect the switch. The sensors are able to detect a magnetic signal at speeds of the piston up to 1 m/s.

## MAGNETIC SENSORS SERIES FM100

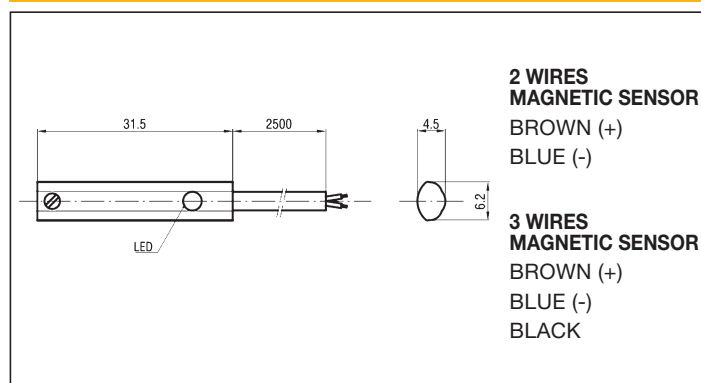
### TECHNICAL DATA

TYPE	FM100	FM100R	FM100N	FM100E	FM100EN
	FM100/C*	FM100R/C	FM100N/C*	FM100E/C	FM100EN/C
Working temperature	-10 ÷ +70 °C				
Protection class	IP 67				
Model	REED SWITCH			HALL EFFECT	
Contacts	N.O.		N.C.	PNP	NPN
Voltage AC/DC	3 ÷ 230 V 3 ÷ 30 V*	3 ÷ 30 V	5 ÷ 120 V 3 ÷ 30 V*	6 ÷ 30 V	
Max voltage drop	3 V	-	3,5 V	1 V	
Max exchange current	500mA 200mA*	200mA	100 mA	200mA	
Max power	10 W 6 W*	6 W	10 W	6 W	
Operating frequency	200 Hz	500 Hz	200 Hz	200 KHz	

### MATERIALS

Body	Polyamide, stainless steel and brass
Cable	Polyvinylchloride
Connector	Polyurethane and gold-plated brass

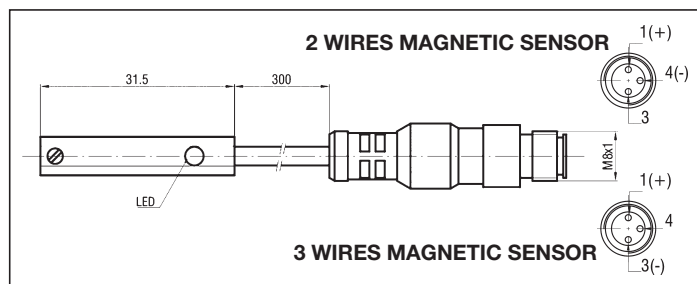
### FM100 - FM100R - FM100N - FM100E - FM100EN



DESCRIPTION	WEIGHT (g)	TYPE
N.O. reed switch with LED and 2 wires cable 3 m length	33	FM100
N.O. reed switch with LED and 3 wires cable 3 m length	33	FM100R
N.C. reed switch with LED and 2 wires cable 3 m length	33	FM100N
Hall effect switch version PNP with LED and 3 wires cable 3 m length	37	FM100E
Hall effect switch version NPN with LED and 3 wires cable 3 m length	37	FM100EN

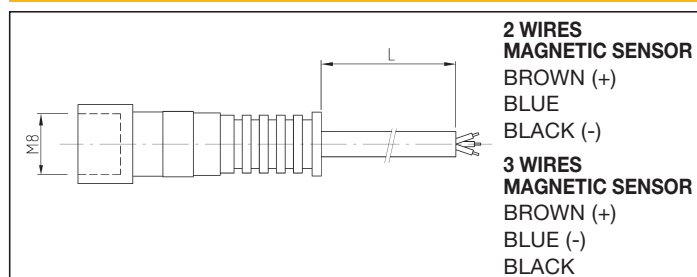


FM100/C - FM100R/C - FM100N/C - FM100E/C - FM100EN/C



DESCRIPTION	WEIGHT (g)	TYPE
N.O. reed switch with LED and 2 wires ring nut connector M8	45	FM100/C
N.O. reed switch with LED and 3 wires ring nut connector M8	45	FM100R/C
N.C. reed switch with LED and 2 wires ring nut connector M8	45	FM100N/C
Hall effect switch version PNP with LED and 3 wires ring nut connector M8	49	FM100E/C
Hall effect switch version PNP with LED and 3 wires ring nut connector M8	49	FM100EN/C

### EXTENSION WITH FEMALE CONNECTOR M8



DESCRIPTION	WEIGHT (g)	L (m)	TYPE
Extension 3 m length with female connector M8	40	3	CNT3
Extension 5 m length with female connector M8	60	5	CNT5

### MAGNETIC SENSORS SERIES FM157

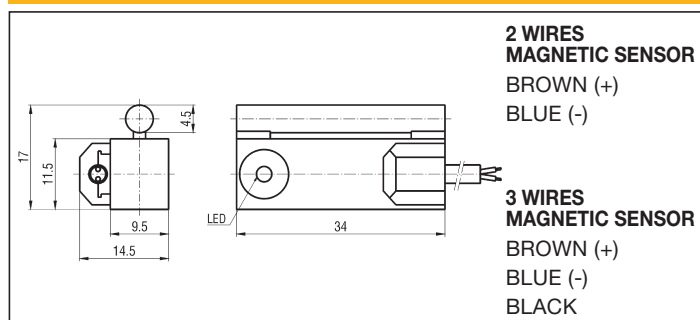
#### TECHNICAL DATA

TYPE	FM157 - FM157/C	FM157E - FM157E/C
Working temperature	-10 ÷ +70 °C	
Protection class	IP67	
Model	REED SWITCH	HALL EFFECT
Contacts	N.A.	PNP
Voltage AC/DC	3 ÷ 250 V	6 ÷ 30 V
Max voltage drop	3 V	1 V
Max exchange current	1500 mA	250 mA
Max power	10 W	6 W
Operating frequency	500 Hz	200 KHz

#### MATERIALS

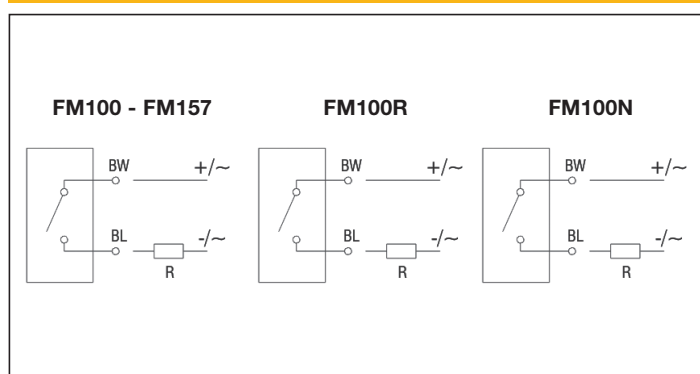
Body	Polyamide, stainless steel and brass
Cable	Polyvinylchloride
Connector	Polyurethane and gold-plated brass

#### FM157 - FM157E

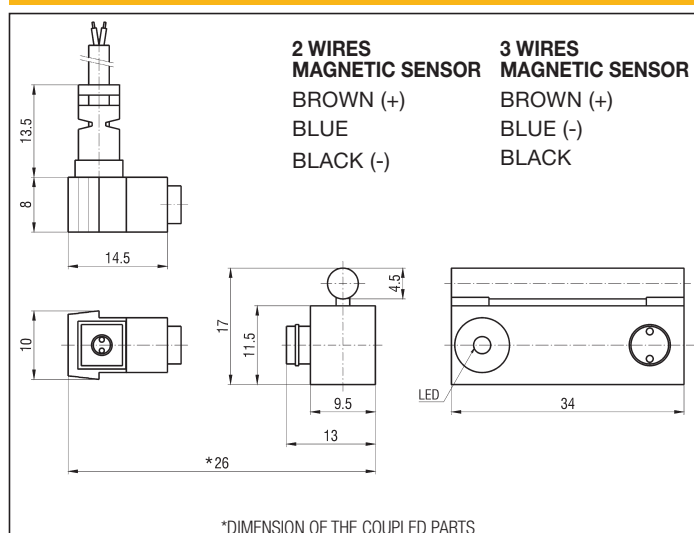


DESCRIPTION	WEIGHT (g)	TYPE
Reed switch with LED and 2 wires cable 2,5 m length	55	FM157
Hall effect switch version PNP with LED and 3 wires cable 2,5 m length	58	FM157E

#### ELECTRIC CIRCUIT REED SWITCH

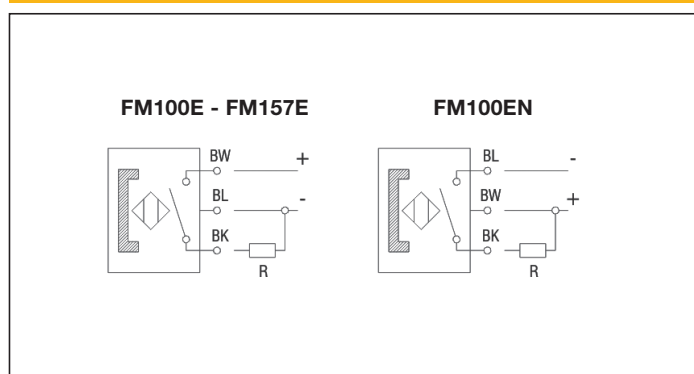


#### FM157/C - FM157E/C

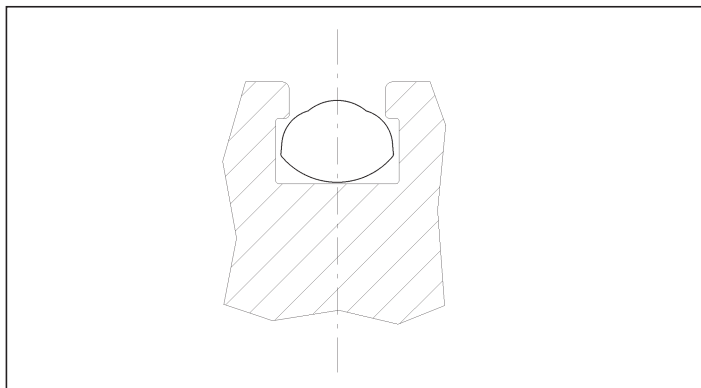


DESCRIPTION	WEIGHT (g)	TYPE
Reed switch with LED, connector M8 and 2 wires cable 2,5 m length	58	FM157/C
Hall effect switch version PNP with LED, connector M8 and 3 wires cable 2,5 m length	61	FM157E/C

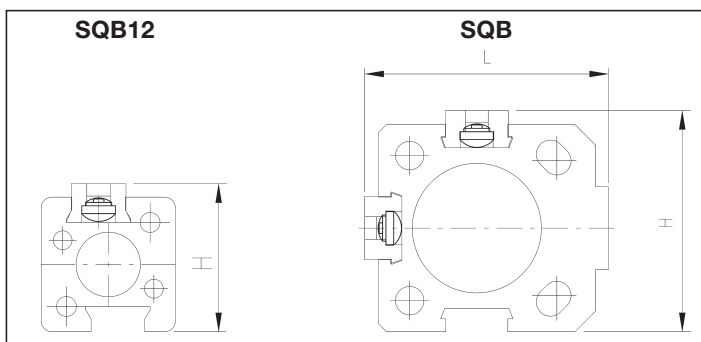
#### ELECTRIC CIRCUIT HALL EFFECT SWITCH



POSITIONING INSIDE "TEE-SLOT"



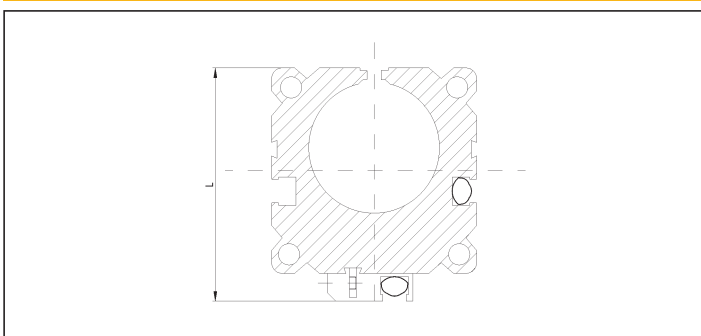
FIXING ADAPTER - PLASTIC - SQB12 - SQB



MAXIMUM DIMENSIONS WITH CYLINDERS SERIES B

H	L	Ø CYLINDER	TYPE
27	-	12	SQB12
32	36	16	SQB
37	41	20	
49	53	32	
58	61	40	
68	73	50	
81	89	63	
101	107	80	
124	132	100	

SENSOR FIXING BRACKETS - ALUMINIUM- SQZ



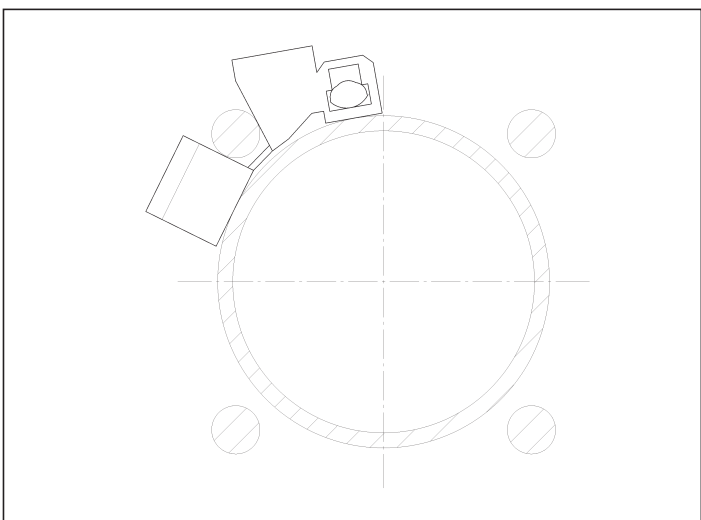
MAXIMUM DIMENSIONS WITH CYLINDERS SERIES Z

L	Ø CYLINDER	TYPE
36,6	18	SQZ
48,6	25	
58,6	32	
69,6	40	
84,6	50	
99,6	63	

P.S.: Sensor fixing brackets type "SQZ" can be used to mount the magnetic sensors "FM100" in the swallow-tailed slots.

P.S.: For Ø 18 it is not possible to mount the magnetic sensors in the opposite side of the yoke.

SENSOR FIXING BRACKETS WITH TIE RODS - AISI 304 STAINLESS STEEL - IFS

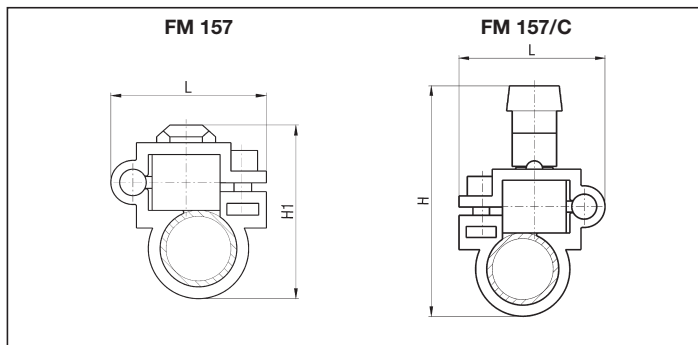


MAXIMUM DIMENSIONS WITH CYLINDERS SERIES AX

Ø CYLINDER	TYPE
32	IFS1
40	
50	
63	
80	
100	IFS2
125	
160	
200	

1

### FIXING BRACKETS - PLASTIC - FG

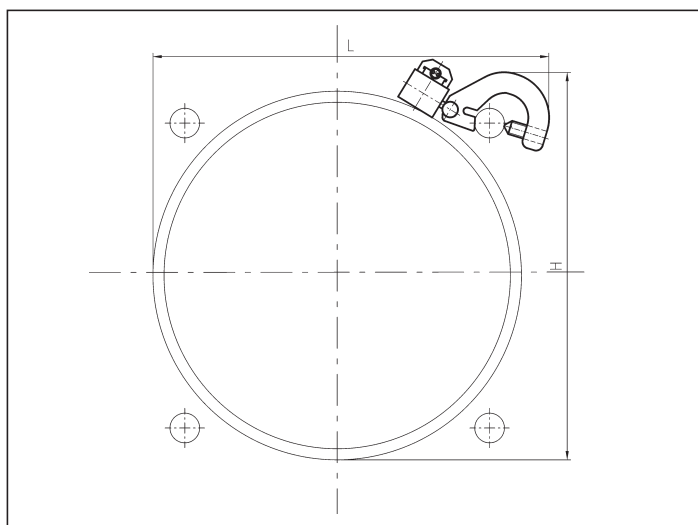


### MAXIMUM DIMENSIONS WITH CYLINDERS

H1	H	L	CYLINDER SERIES and Ø		TYPE*
			U	P	
26	38	23	8	-	FG/050
28	40	28	10	-	FG/051
31	42	27	12	-	FG/052
33	45	28,5	16	-	FG/053
38	52	32	20	-	FG/054
43	58	32	25	-	FG/055
51	65	32	-	32	FG/056
60	73	32	-	40	FG/057
70	83	32,5	-	50	FG/058
84	97	32,5	-	63	FG/059

\* Supplied with the adapter for "FM100".

### FIXING BRACKETS - ALUMINIUM - ST

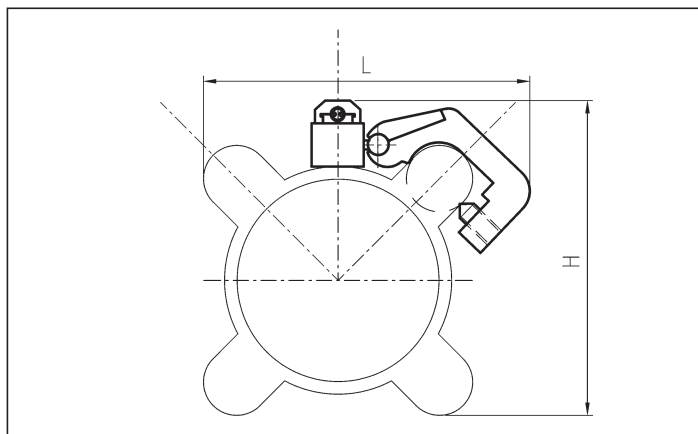


### MAXIMUM DIMENSIONS WITH CYLINDERS

H	L	CYLINDER SERIES and Ø			TYPE*
		XL	CPU	CX	
33	33	-	32	32	ST3456
37,5	33	-	40	40	
40	35	-	50	50	
49	39	-	63	63	
56	48	-	80	80	SQ32-40A
61	54	-	100	100	
71	69	125	-	125	SQ80-100A
92	90	160	-	160	
120	118	200	-	200	

\* Supplied with the adapter for "FM100".

### FIXING BRACKETS - ALUMINIUM - ST

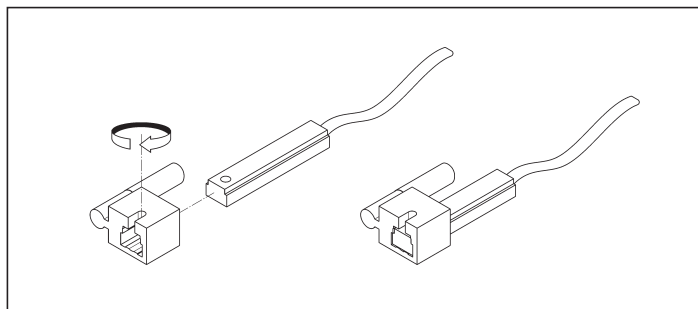


### MAXIMUM DIMENSIONS WITH CYLINDERS SERIES CPA - WR

H	L	Ø CYLINDER	TYPE*
55	63	32	ST34
65	60	40	
77	72	50	ST56
87	82	63	
102	101	80	ST80
120	117	100	
147	131	125	ST102





\* Supplied with the adapter for "FM100".

### ADAPTER FOR SERIES FM100 (SUPPLIED WITH FIXING BRACKETS)



## MAGNETIC SENSORS SERIES FM100/EX

### TECHNICAL DATA

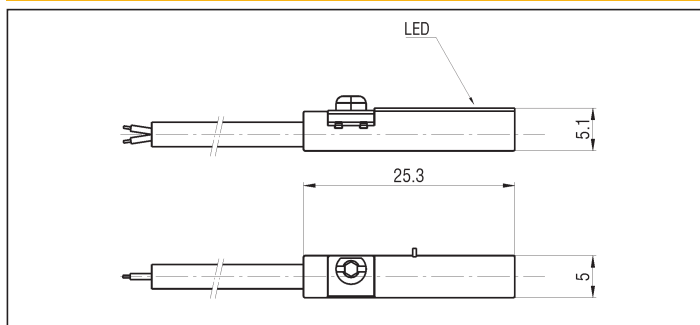
TYPE	FM100/EX 3GD	FM100/EX 1GD
Working temperature	-20 ÷ +60 °C	-25 ÷ +70 °C
Protection class	P 65 / IP 67	
Model	HALL EFFECT	
Contacts	PNP N.A.	*
Voltage DC	10 ÷ 30 V	8.2 V
Max voltage drop	2,5 V	-
Max exchange current	100 mA	-
Operating frequency	6000 Hz	2000 Hz
Marking	 II 3D Ex tc IIC T125 °C Dc X  II 3G Ex nA IIC T4 Gc X	 II 1D Ex ia IIC T135 °C Da  II 1G Ex ia IIC T4 Ga

\* Connection to certified intrinsically safe electric circuits with maximum values: U=15V, I=50mA, P=120mW

### MATERIALS

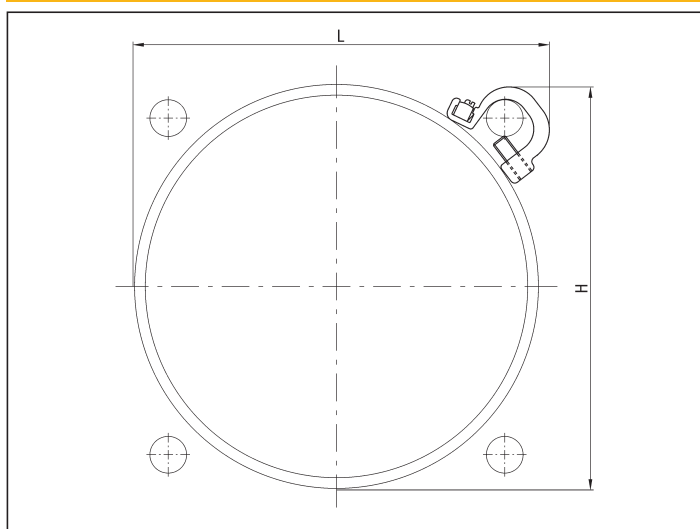
Body	Polyamide
Cable	PVC
Eccentric fixing	Stainless steel

### FM100/EX 1GD - FM100/EX 3GD



DESCRIPTION	WEIGHT (g)	TYPE
Magneto-resistive 3GD switch, version PNP with LED and 3 wires cable 6 m length	104	FM100/EX 3GD
Magneto-resistive 1GD switch, version PNP with LED and 2 wires cable 6 m length	86	FM100/EX 1GD

### FIXING BRACKETS

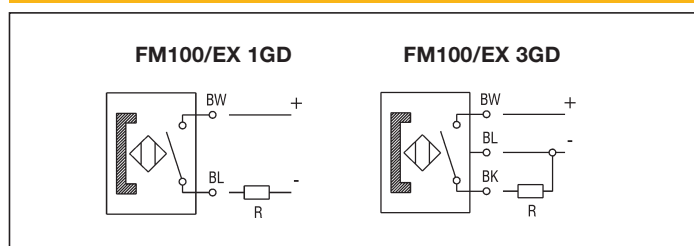


### MAXIMUM DIMENSIONS WITH CYLINDERS

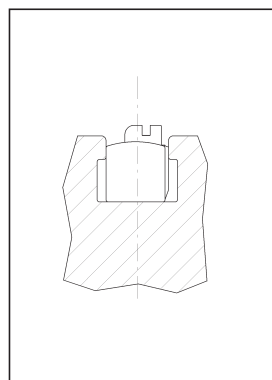
L	H	CYLINDER SERIES and Ø		TYPE
		XL	CX	
135	131	125		FS125
170	166	160		FS162
210	205	200		FS162



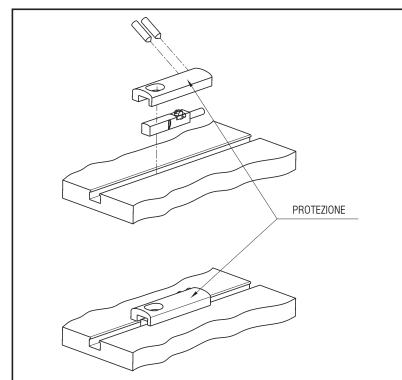
### ELECTRIC CIRCUIT HALL EFFECT SWITCH



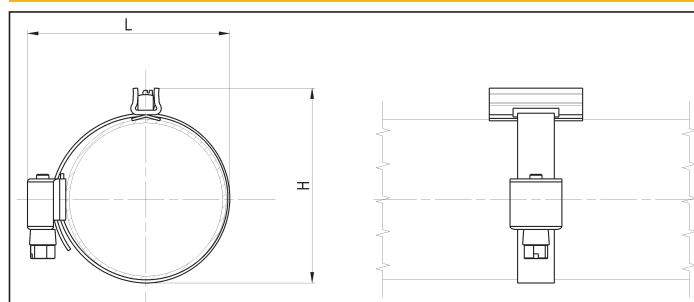
### TEE-SLOTS



### PROTECTION FM100/EX 3GD



### FIXING BRACKETS



### MAXIMUM DIMENSIONS WITH CYLINDERS

L	H	CYLINDER SERIES and Ø		TYPE
		U	P	
18	17	8	-	F1
20	19	10	-	
22	21	12	-	
26	25	16	-	F2
30	29	20	-	
35	34	25	-	F3
42	41	-	32	
50	49	-	40	F4
61	60	-	50	F5