

Level switch with ELF motor is used for level control in silos and tanks where materials with solid particles are stored. Full and empty signals can be received by performing level control in many demanding applications with different probe and pedal varieties in a safe manner. It can be connected horizontally and vertically.

#### Working Principle:

A palette selected according to the material is installed on the tip of the motorized level switch which can be installed on the tank wall. It revolves idly with the revolution speed of the probe motor. Material to be detected reaches to the level of the palette and covers its circumference and creates a counter-force according to the revolution force. Firstly, level information alarm contact is activated. Then, the other contact is triggered and stops the motor. Adjustment of the spring in four different torque values according to specific weight of the material can be realized by the user. When the material level at the end of the palette is decreased the created force is released and the motor starts to revolve, consequently, changing the alarm position.

#### Applications ;

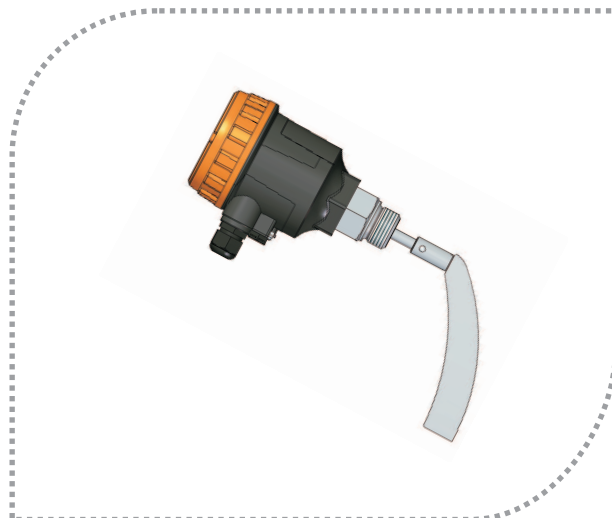
**Plastic Industry ;** PVC, PVDF, PP granular etc..

**Food Industry ;** Grain Dust, Ground Corn, Sugar-Granulated, Cacao, Malt-Graoung Dry, Sunflower Corn, Whead, Peanuts-Shelled, Clays- Kaoline, Talcum Powder, Ground-Paprika, Coffee-Roasted vb..

**Build Industry ;** Rocks-Limestone Crushed, Lime, Cement Powder, Rubber Ground, Lime Hydrate Dust, Calsium Dust, Iron Chips, Silica Sand, Moulding Sand, Styrofaam etc..

**Wood Industry ;** Wooden Fiberst, Saw Dust etc..

**Other Chemistry Industry ;** Coal Lump, Ash-Coal Dry etc..



#### Technical Specifications :

Working Temperature	(-) 20 °C....(+) 90 °C Opt. Max.150 °C With High Temperature Type (Plastic Housing) Max.200 °C With High Temperature Type (Aluminium Housing) Max.600 °C Very High Temperature Type
Ambient Humidity	0-98 % Rh (Non Condensate)
Ambient Temperature	(-) 20 °C ... (+) 60 °C
Working Pressure	(-) 0,6 bar... (+) 0,6 bar
Material	Aluminium (Std) Opt. 304 / 316 Stainless Steel, PTFE Antistatic Plastic (Std) Opt. Aluminium Enjection - AlSi12Fe (Std) Body : Black (RAL:9005) Cover : Orange (RAL:2004)
Connection Housing	304 Stainless Steel ( Std) Opt. 316 Stainless Steel
Paddle And Rode	304 Stainless Steel ( Std) Opt. 316 Stainless Steel
Extension Pipe	304 Stainless Steel ( Std) Opt. 316 Stainless Steel
Grounding Apparatus	304 Stainless Steel
O-Ring for Cover	Elastomer Thermoplastic 120°C (Std) Ops. FPM (Viton) 150°C
Bearing	Double ball bearing (With Dust-protected) (120°C) Ops. 280°C
Dust Protected Felting	NBR (Std) Opt. FPM (Viton) 150 °C, PTFE 200 °C
Connection	1" BSP (Std) , Opt. 1 ¼" BSP , 1 1/2" BSP Male Thread
Power Consumption	Max. 4W
Revolutions Per Minute	5 d/d (Std) (Clockwise - When Looking Paddle Side) Opt. 1,5-1,8 d/d
Power Supply	24 VDC , +/-10 24/110/220 VAC 50/60 Hz +/- %10
Cable and stopper input	PG 13.5 (Std) Opt. M20 x 1,5
Relay switching capacity	2 A / 250 VAC 2 x NO / NC (SPDT) 5E4 Opt. 10 A / 250 VAC - 4 A / 30 VDC
LED	Power LED: Green , Alarm LED: Red
Ventilation Gland	M10 x 1,5 mm <sup>2</sup> (Only For Plastic Housing)
Max. Grain Structure	50 mm
Min. Density	0,04 g/cm <sup>3</sup> (According to paddle type)
Torque Rating	4 Stages, adjustable
Load on probe	Max. 500 N (Extention Pipe)
Protection Class	IP 66 (EN60529)
Certification	CE declaration, EMC , LVD

# ELF

## ROTARY LEVEL SWITCH

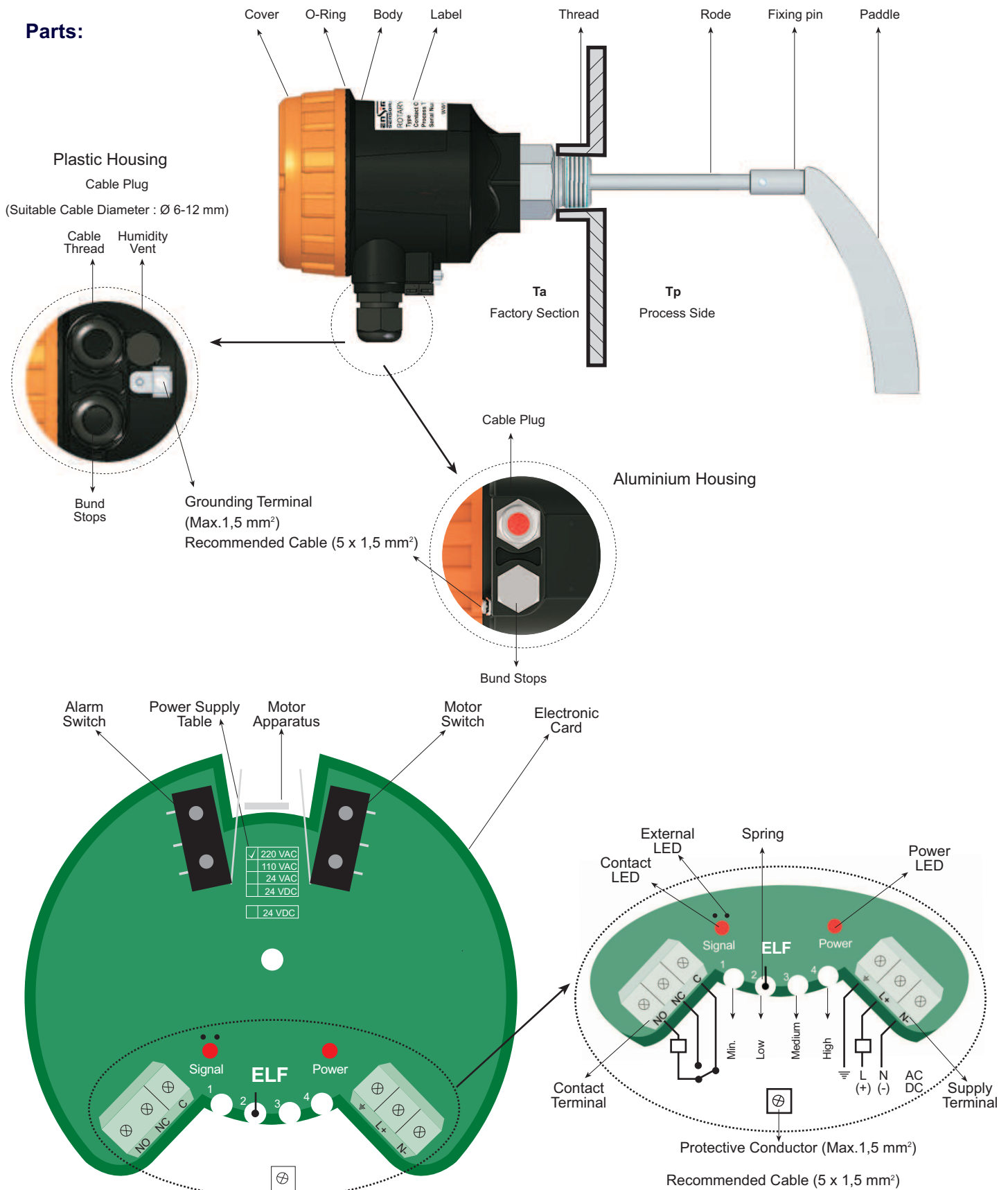
**ELF 101**  
**ELF 102**  
**ELF 103**  
**ELF 103p**  
**ELF 104**  
**ELF 105**  
**ELF 106**  
**ELF 106m**  
**ELF 107**  
**ELF 108**  
**ELF 109**

#### Advantages :

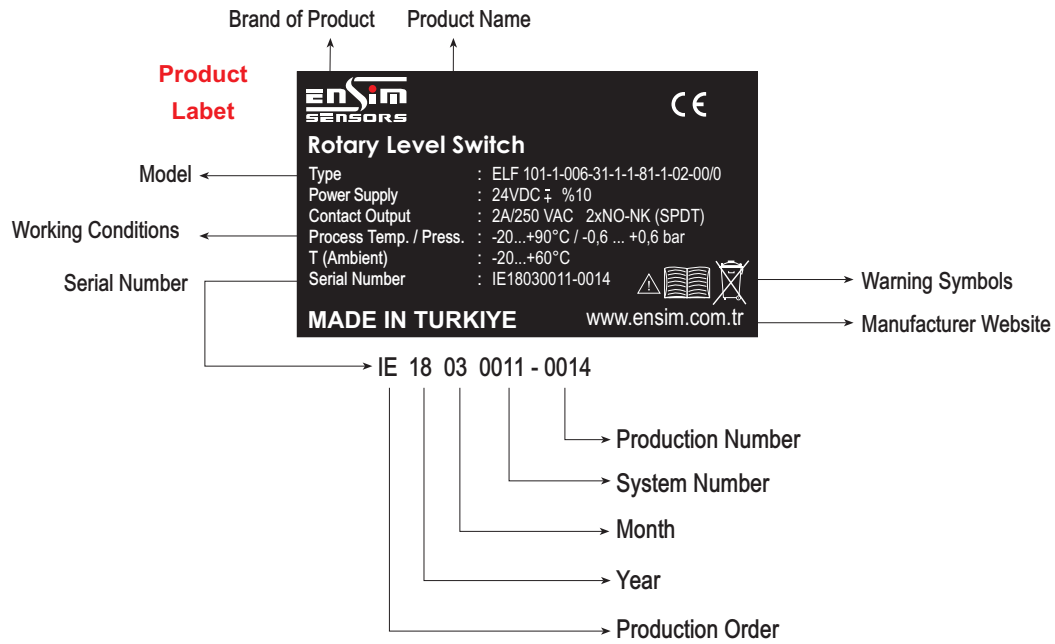
- \* Fast Delivery Time
- \* Reverse Rotaion Safety
- \* Sensitivity Adjustable
- \* Excellent Mechanical



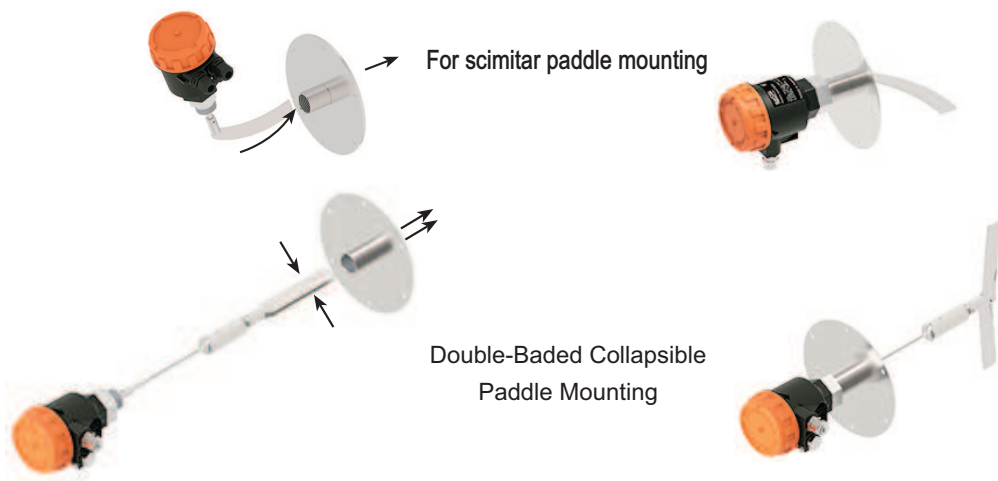
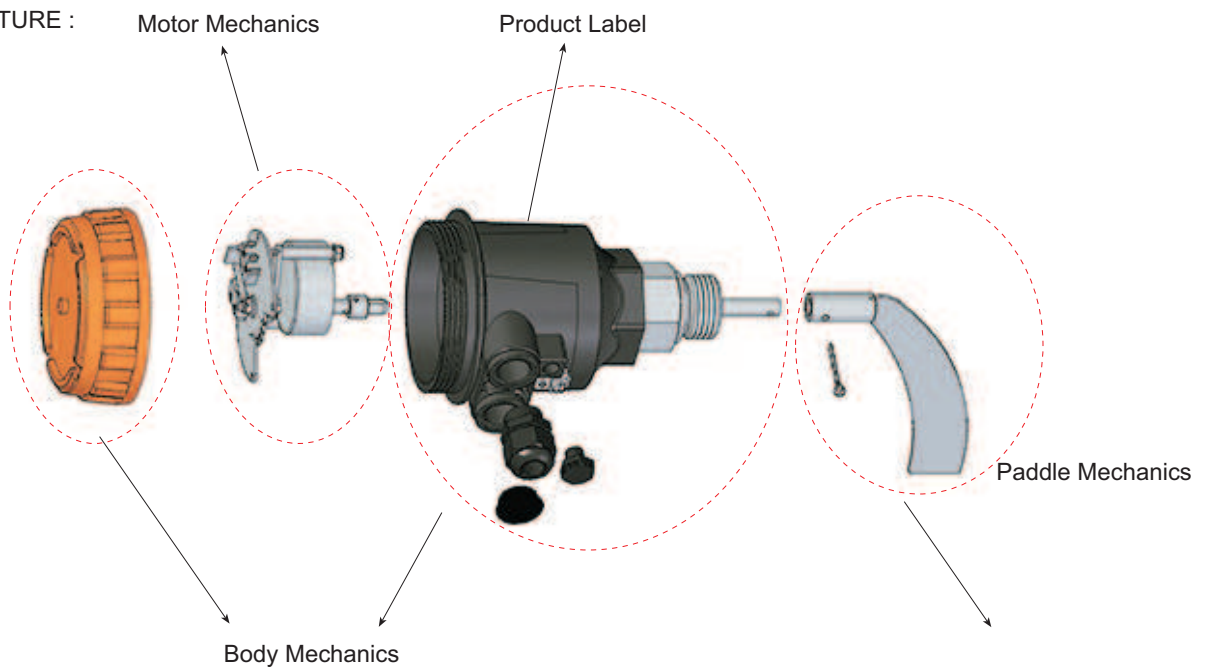
## Parts:



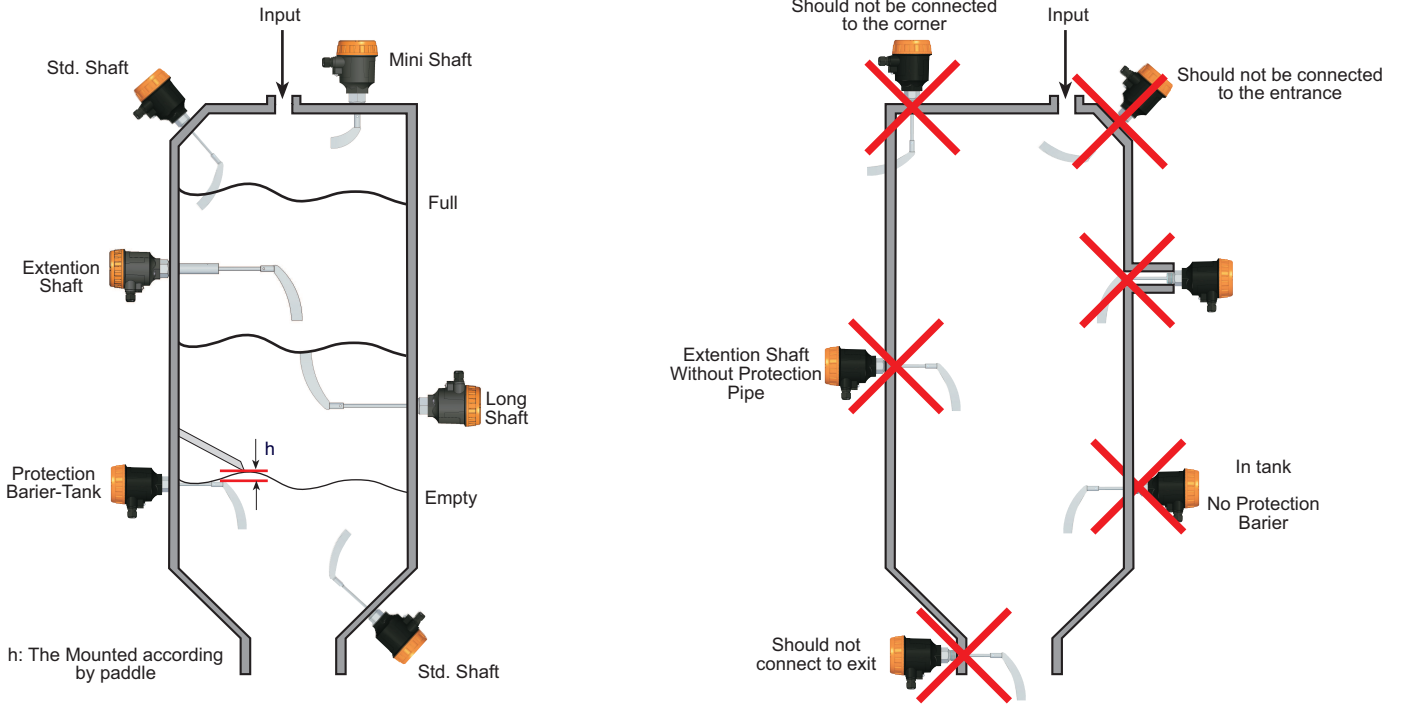
Note : It has been produced according to IPC A 600 class 2 conditions and tested with 100 % E-test. Moreover, HASL (non-lead) surface test has been applied.



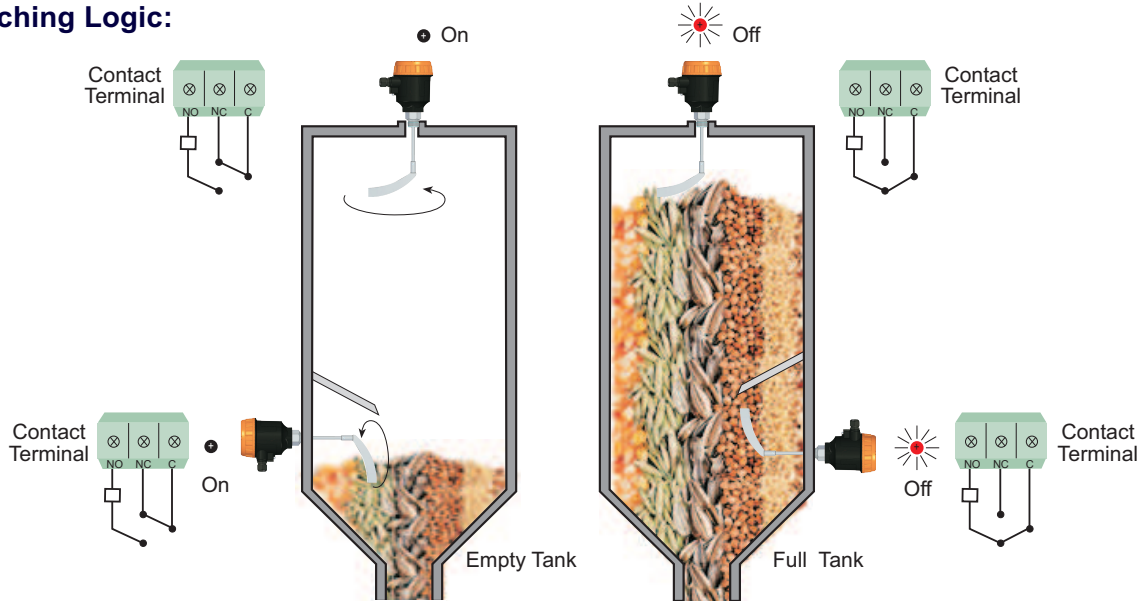
## MODULAR STRUCTURE :



### Example Mounting Types :



### Switching Logic:



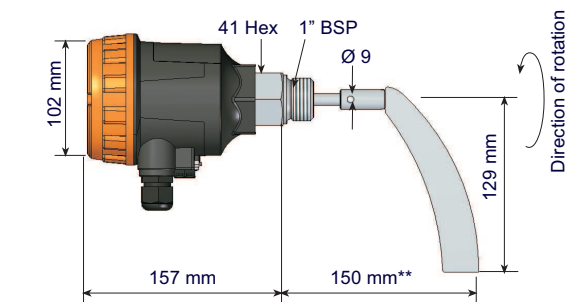
### Tork Ayarlama Mekanizması

Tork yayı, fabrika çıkışında en düşük zayıf olarak ayarlanan şaft çıkış torkunu ayarlamak için kullanılmaktadır. Tork yayının ayarı, müşterinin belirttiği ölçülecek malzemenin özgül ağırlığına göre ayarlanabilmektedir. Ölçülen malzemenin özgül ağırlığı yüksekse, lütfen uyumu sağlayana kadar daha güçlü yay konumuna ayarlayınız. Nemli ve yapışma eğilimi olan malzemelerde yüksek tork ayarı, kuru ve düşük özgül ağırlıklı malzemelerde, düşük tork ayarı seçilmelidir.

Working Position	Supply	Motor Position	Output Position	Alarm LED Position
Normaly Working	Yes	Stop	-	On light
	Yes	Stop	Full	On light
During an Alarm	Yes	Stop	Full	On light
	Yes	-	Full	Uninspiring

## Sample Models :

### ELF 11

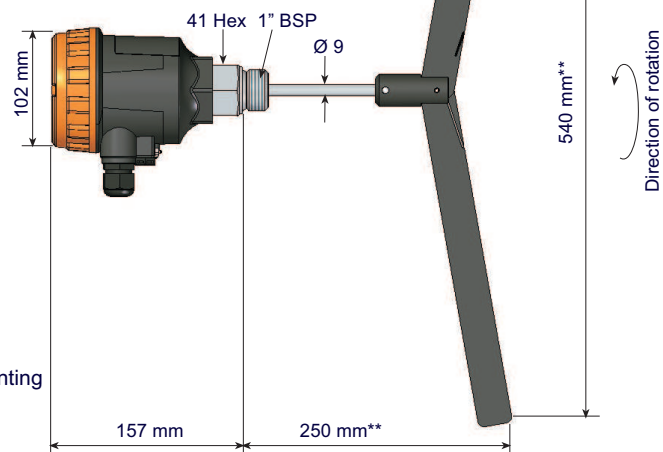


90 °C Opt. 150 °C

Vertical / Horizontal Mounting

Weight : 1.1 kg

### ELF 13p (For EPS-XPS)

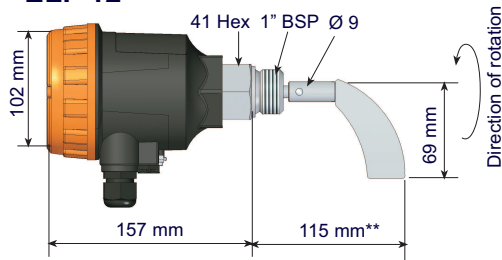


(-) 20 °C...(+ ) 60 °C

Vertical / Horizontal Mounting

Weight : 1.1 kg

### ELF 12

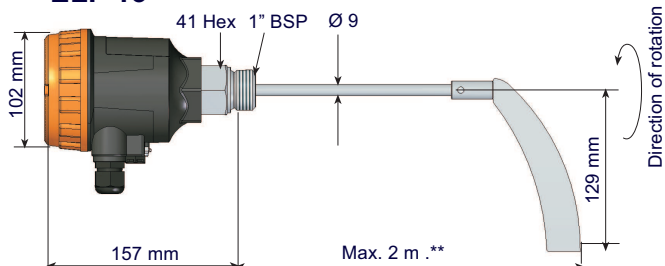


90 °C Opt. 150 °C

Vertical / Horizontal Mounting

Weight : 1 kg

### ELF 13

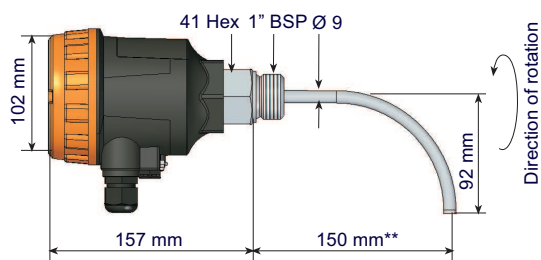


90 °C Opt. 150 °C

Vertical Mounting

Weight : 1.1 kg

### ELF 14

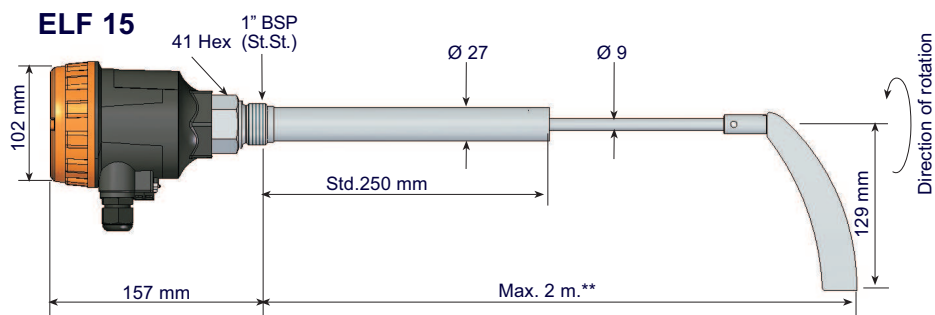


90 °C Opt. 150 °C

Vertical / Horizontal Mounting

Weight : 1 kg

### ELF 15



90 °C Opt. 150 °C

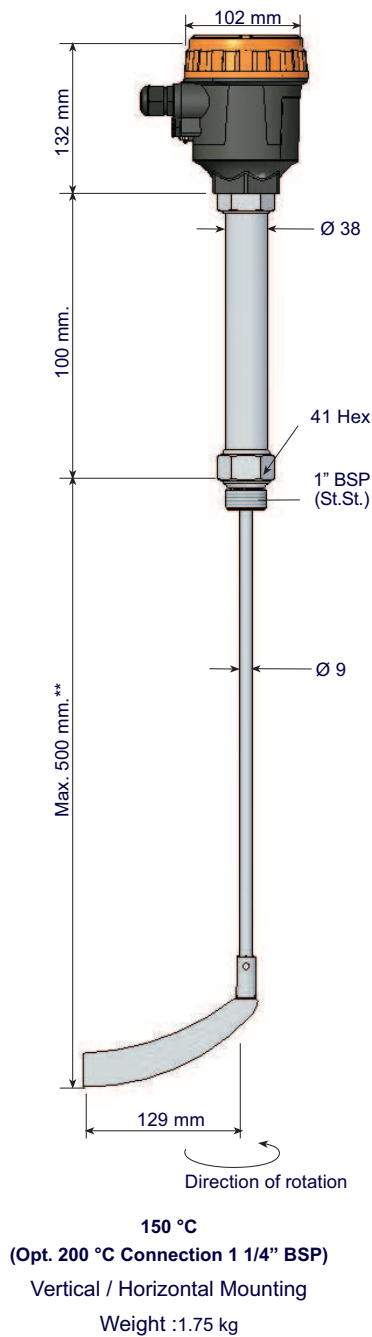
Vertical / Horizontal Mounting

Weight : 1.5 kg

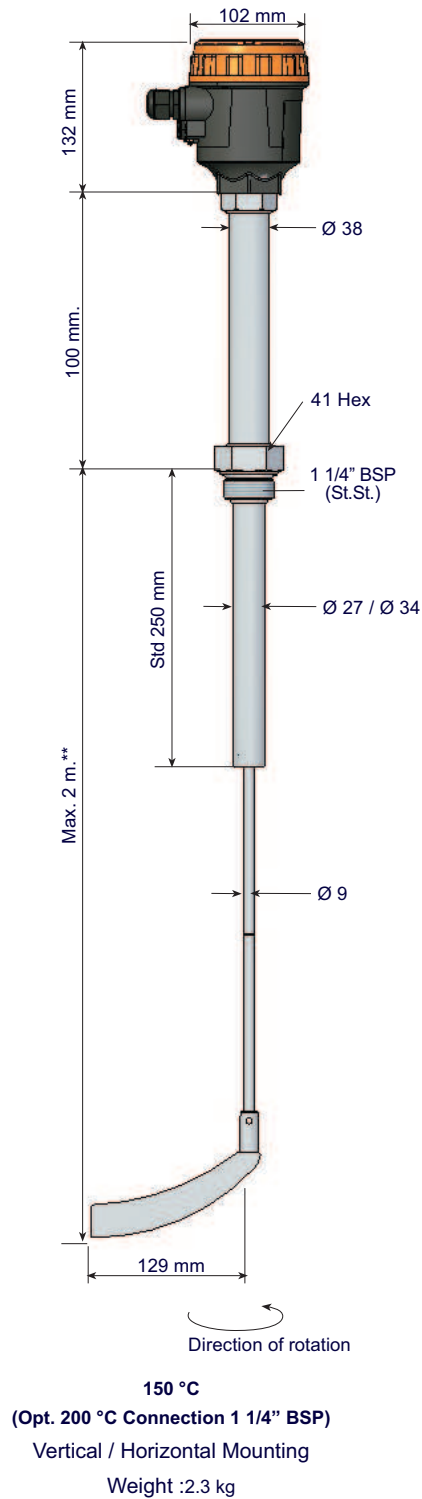
\*\* Tolerance  $\pm 5$  mm .

## Sample Models :

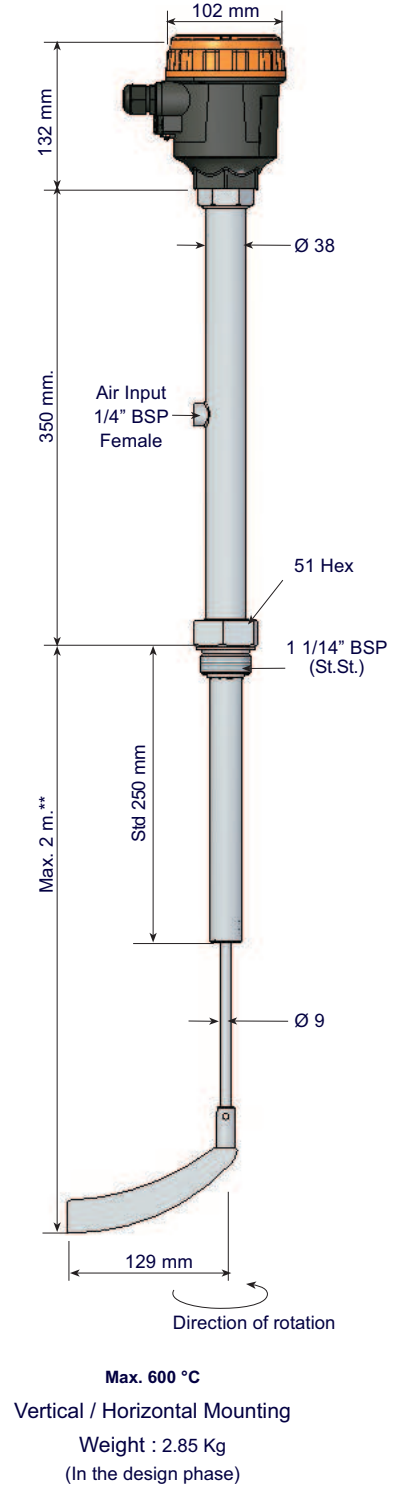
**ELF 106m**



**ELF 106**



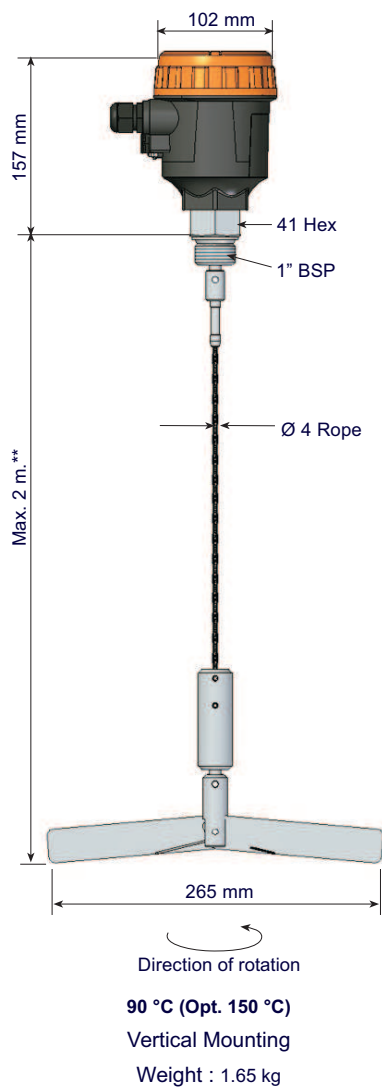
**ELF 107**



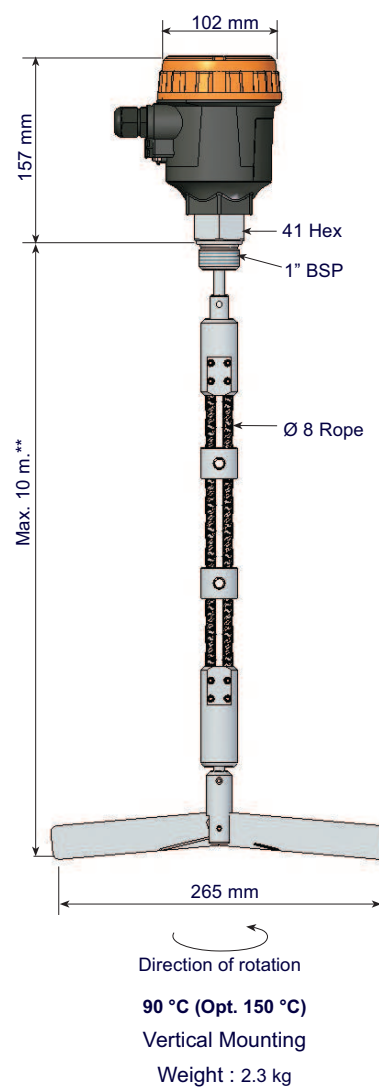
\*\* Tolerance  $\pm 5$  mm .

## Sample Models :

**ELF 108**



**ELF 19**

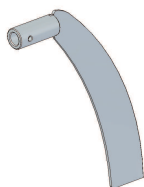


\*\* Tolerance  $\pm 5$  mm .



## Paddle Shapes:

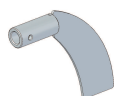
**Standard  
Scimitar Paddle**  
(258 mm)



Weigh 105 g.

**Paddle 1** (304 St.St.)  
**Paddle 2** (316 St.St.)

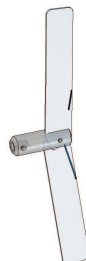
**Mini  
Scimitar Paddle**  
(138 mm)



Weigh 75 g.

**Paddle 3** (304 St.St.)  
**Paddle 4** (316 St.St.)

**Double-Baded  
Collapsible Paddle**  
(265 mm)



Weigh 235 g.

**Paddle 5** (304 St.St.)  
**Paddle 6** (316 St.St.)

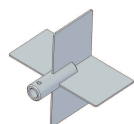
**Double-Baded  
Collapsible Paddle**  
(540 mm)



Weigh 120 g.

**Paddle 11** (Plexiglass)

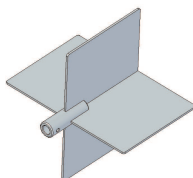
**Cross-Wing  
Paddle**  
(105 x 90 mm)



Weigh 185 g.

**Paddle 9** (304 St.St.)  
**Paddle 10** (316 St.St.)

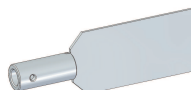
**Cross-Wing  
Paddle**  
(148 x 98 mm)



Weigh 515 g.

**Paddle 7** (304 St.St.)  
**Paddle 8** (316 St.St.)

**Single Wing  
Paddle**  
(75 x 35 mm)



**Paddle 12** (304 St.St.)  
**Paddle 13** (316 St.St.)

**Single Wing  
Paddle**  
(80 x 65 mm)



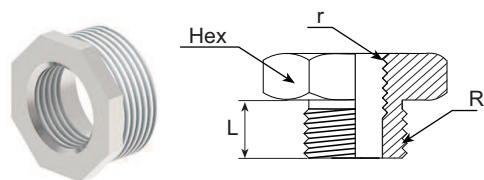
**Paddle 14** (304 St.St.)  
**Paddle 15** (316 St.St.)

Material	Min.Density (Kg/m <sup>3</sup> )	Material	Min.Density (Kg/m <sup>3</sup> )
Chopped Corn	550	Metals, Iron Chips	2650
Crushed limestone	1350-1510	Coal Pellet	400-800
Sawdust	50-160	Dry Malt Floor	310
Rubber Floor	400-800	Dry Coarse Coal	560-725
Tea Leaves	195	Grain - Oat	400-560
Shelled Peanut	550-710	Sugary Granule	880
Dusting Powder	730-990	Wheat	400-500
Acrylic Resin	330	Breadstuff	600-800
Wheat flour	480-560	Aquaous Lime Powder	400-500
Cement Dust	1370-1510	Powder PVC	300-600
Silica Sand	1510	Granule PVC	300-600
Lumpy Polypropylene	540-575	Sunflower Marsh	300-500
Roasted Coffee	350-480	Red Pepper	800-1000



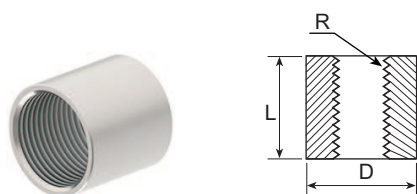
## Accessories :

### Reduction :



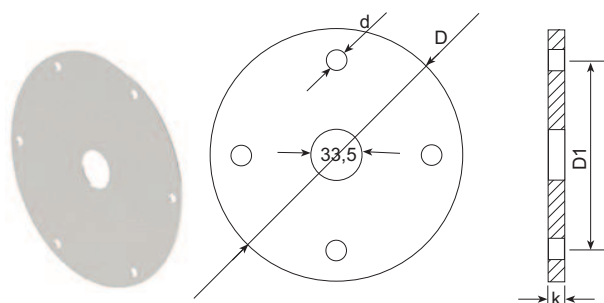
Order Code	R	r	L (mm)	Hex (mm)	Material
/ R1	1" BSP	1 1/4" BSP	21	44	304 St.St.
/ R2	1" BSP	1 1/2" BSP	19	50	304 St.St.
/ R7	1" BSP	2" BSP	25	60	304 St.St.
/ R3	1" BSP	1 1/4" BSP	21	44	316 St.St.
/ R4	1" BSP	1 1/2" BSP	19	50	316 St.St.
/ R5	1" BSP	1 1/4" BSP	22	45	ST 37 Steel
/ R6	1" BSP	1 1/2" BSP	22,5	50	ST 37 Steel

### Muff :



Order Code	BSP	D (mm)	L (mm)	Material
/ M1	1"BSP	Ø 37	41	304 St.St.
/ M2	1 1/4"BSP	Ø 47,5	46,5	304 St.St.
/ M3	1 1/2"BSP	Ø 54,4	48,1	304 St.St.
/ M4	1"BSP	Ø 37	41	316 St.St.
/ M5	1 1/4"BSP	Ø 47,5	46,5	316 St.St.
/ M6	2"BSP	Ø 54,4	48,1	316 St.St.
/ M7	1"BSP	Ø 37,6	40,2	ST 37 Steel
/ M8	1 1/4"BSP	Ø 47,8	47	ST 37 Steel
/ M9	1 1/2"BSP	Ø 52,6	46,5	ST 37 Steel

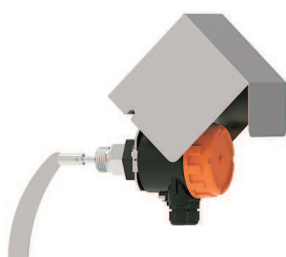
### Flange :



Order Code	D (mm)	D1 (mm)	d (mm)	k (mm)	Number of Hole	Material
/ F1	110	90	8	2	4	304 St.St.
/ F2	110	90	8	2	4	316 St.St.
/ F3	200	180	8	2	6	304 St.St.
/ F4	200	180	8	2	6	316 St.St.

**Note :** 1"BSP With 1" Nut-Aluminium

### Protection Case:



Material : 304 St. St.  
Welded Production  
Open - Close hinged  
For Protection of switch from external conditions

**Order Form : Please consider sample models when coding**

## 1 MODEL ELF

Standart.....1 Ex Proof Model (In the design state).....2

## 2 CERTIFICATE

None.....0 (EN10204-3-1) Material Certification.....1

## 3 SHAFT TYPE - (STEM LENGHT)

Standart Shaft - L= 150 mm.....1	Shaft With Extention Tube - L= 2 m. (For High Temperature).....6
Mini Shaft - L= 75 mm.....2	Mini-Shaft With Extention Tube - L= 150 mm Max.500 mm.....6m
Long Shaft - L= 500 mm .....3	Extention High Temperature Shaft- L= 2m. (At the design state)..7
Standart Shaft - L= 250 mm.....3p	Rope Shaft - L= 2000 mm).....8
Single Shaft - L= 500 mm .....4	Reinforced Rope (28 KN) - L= Max.10 m.....9
Cable Extented Shaft - L= 500 mm.....5	Special.....x

## 4 PADDLE TYPE

Without Paddle (184 mm) .....0	Cross-Wing Paddle (210 mm).....5
Standart Scimater Paddle (258 mm).....1	Cross-Wing Paddle (298 mm).....6
Mini Paddle (138 mm).....2	Single Wing Paddle (80x65 mm).....7
Double-Baded Collapsible Paddle (265 mm).....3	Single Wing Paddle (74x35 mm).....8
Double-Baded Collapsible Paddle-Plexiglass (540 mm).....4	Special.....x

## 5 CONNECTION

* 1" BSP Male Thread (Std).....006	1 1/2" BSP Male Thread .....008
1 1/4" BSP Male Thread .....007	Special.....x

**\*Those can be choosen(applicable)only products with 90 Celcius working temprature.**

## 6 CONNECTION MATERIAL

304 Stainless Steel.....01	PVC (Max.60 °C).....61
316 Stainless Steel.....02	Delrin (Max.60 °C).....63
Aluminium (Std).....31	PTFE (Max.200 °C).....66
	Special.....x

## 7 POWER SUPPLY

24 VDC.....1	220 VAC 50/60 Hz ± %10.....4
24 VAC 50/60 Hz ± % 10 .....2	48 VAC 50/60 Hz ± % 10.....5
110 VAC 50/60 Hz ± % 10.....3	Special.....x

## 8 REVOLUTIONS PER MINUTE

5 d/d (Std) .....1	Special.....x
1,5 d/d .....2	

## 9 MATERIAL OF POWDER FEELTING

PTFE Max. 200 °C.....	66	Graphite Max. 600 °C (In the design state).....	86
NBR (Std) Max.90 °C.....	81	Special.....	x
FPM Maxs. 150 °C.....	85		

## 10 ROLLER

Metal Ball Bearing (Std) 120 °C.....	1	Metal Ball Bearing 280 °C.....	3
Ceramic Ball Bearing.....	2	Special.....	x

## 11 HOUSING MATERIALS

Plastic (PBT) B20p.....	016	Special.....	x
Aluminum B20x.....	378		

## 12 ELECTRICAL CONNECTION

With Terminals.....	00	Special.....	x
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## 13 OPTIONAL

None.....	/ 0	Muff 1" BSP 304 St.St.....	/ M1
Reduction 1" BSP - 1 1/4" BSP 304 St.St.....	/ R1	Muff 1 1/4" BSP 304 St.St.....	/ M2
Reduction 1" BSP - 1 1/2" BSP 304 St.St.....	/ R2	Muff 1 1/2" BSP 304 St.St.....	/ M3
Reduction 1" BSP - 1 1/4" BSP 316 St.St.....	/ R3	Muff 1" BSP 316 St.St.....	/ M4
Reduction 1" BSP - 1 1/2" BSP 316 St.St.....	/ R4	Muff 1 1/4" BSP 316 St.St.....	/ M5
Reduction 1" BSP - 1 1/4" BSP ST 37 Steel.....	/ R5	Muff 1 1/2" BSP 316 St.St.....	/ M6
Reduction 1" BSP - 1 1/2" BSP ST 37 Steel.....	/ R6	Muff 1" St 37 Steel.....	/ M7
Reduction 1" BSP - 2" BSP 304 St.St.....	/ R7	Muff 1 1/4" ST 37 Steel.....	/ M8
Flange with muff 110 mm 304 St.St.....	/ F1	Muff 1 1/2" ST 37 Steel.....	/ M9
Flange with muff 110 mm 316 St.St.....	/ F2	M12 x 5 pin socket (Max. 60 V).....	/ S1
Flange with muff 200 mm 304 St.St.....	/ F3	External LED socket.....	/ L1
Flange with muff 200 mm 316 St.St.....	/ F4	Change for body - Cover .....	/ Z1
Protection plate 304 St.St.....	/ K1	Special.....	x
Shelter - (For the outside of the tank) 304 St.St. ....	/ K2		

**Important Note : In high temperature applications , felting and protection material must be selected appropriately.**

## SAMPLE

ELF 101 - 1 - 006 - 31 - 1 - 1 - 81 - 1 - 02 - 00 / 0

Rotary Level Switch , ELF 101 , Standard Paddle , L=150mm , 1" BSP, 24VDC