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GENERAL INFORMATIONS

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.

APPLICATION SHIELDS

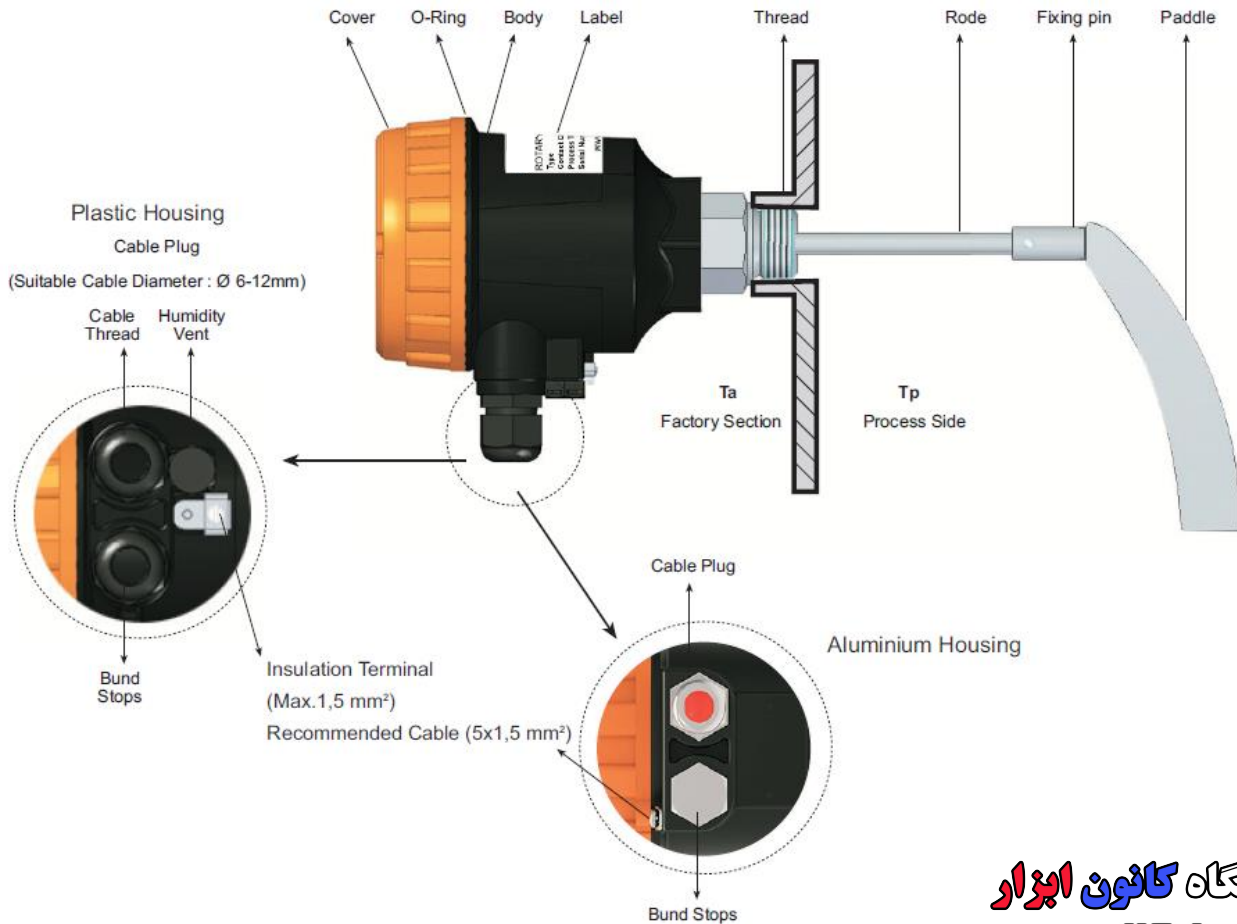
- **Plastic Industry;** PVC, PVDF, PP granular etc.
- **Food Industry;** Grain Dust, Ground Corn, Sugar-Granulated, Cacao, Malt-Graoung Dry, Sunflower Corn, Whead, Peanuts-Shelled, Clays- Kaoline, Talcum Powder, Ground-Paprika, Coffee-Roasted etc.
- **Build Industry;** Rocks-Limestone Crushed, Lime, Cement Powder, Rubber Ground, Lime Hydrate Dust, Calcium 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(+) 90 C Opt. Max.150°C With High Temperature Type (Plastic Housing) Max.200°C With High Temperature Type (Aluminium Housing) Max.600°C With Very High Temperature Type	
Ambient Humidity	0-98 %Rh (Non Condensate)	
Ambient Temperature	-20 ... +60°C	
Working Pressure	-0,6 ... +0,6 bar	
Material	Connection	Alüminyum (Std) Ops. 304 / 316 Stainless Steel, PTFE
	Housing	Antistatic Plastic (Std), Opt. Aluminium Enjection - AlSi12Fe (Std) Body : Black (RAL:9005) Cover : Orange (RAL:2004)
	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	PG13.5 (Std) Opt. M20x1,5	
Relay switching capacity	2A/250 VAC 2xNANK (SPDT) 5E4, Opt. 10A/250 VAC - 4A/30VDC	
LED	Power LED: Green , Alarm LED: Red	

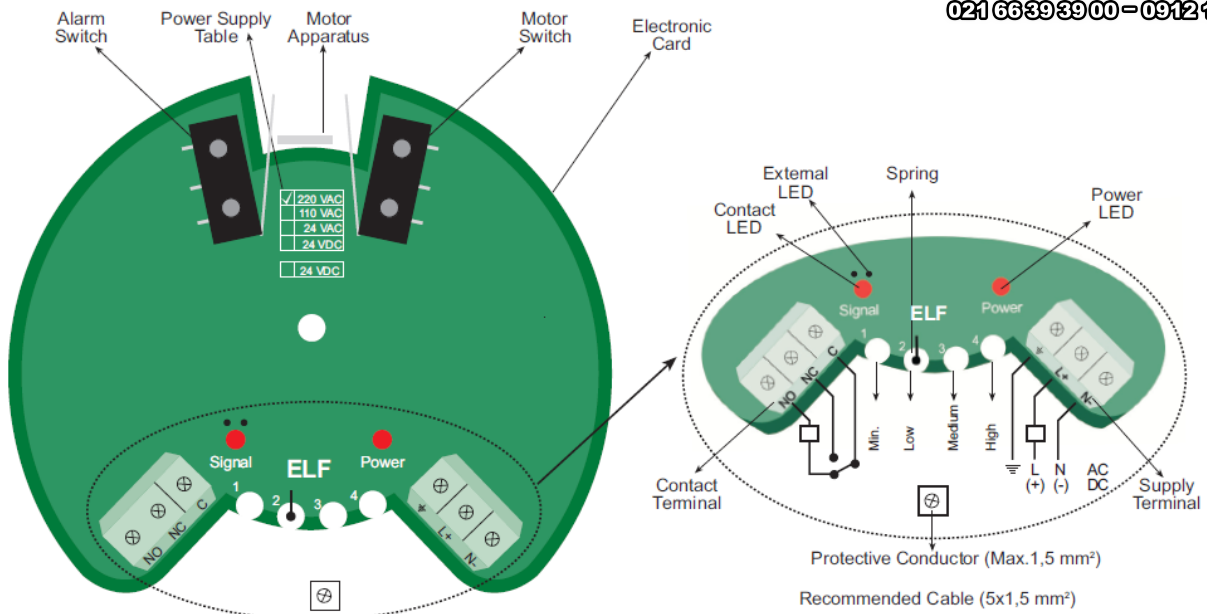
Ventilation Gland	M10x1,5mm (Only For Plastic Housing)
Max. Grain Structure	50mm
Min. Density	0,04 g/cm3 (According to paddle type)
Torque Rating	4 Stages, adjustable
Load on probe	Max. 500 N (Extention Pipe)
Protection Class	IP 66 (EN60529)
Certification	CE declaration, EMC , LVD

PRODUCT PARTS



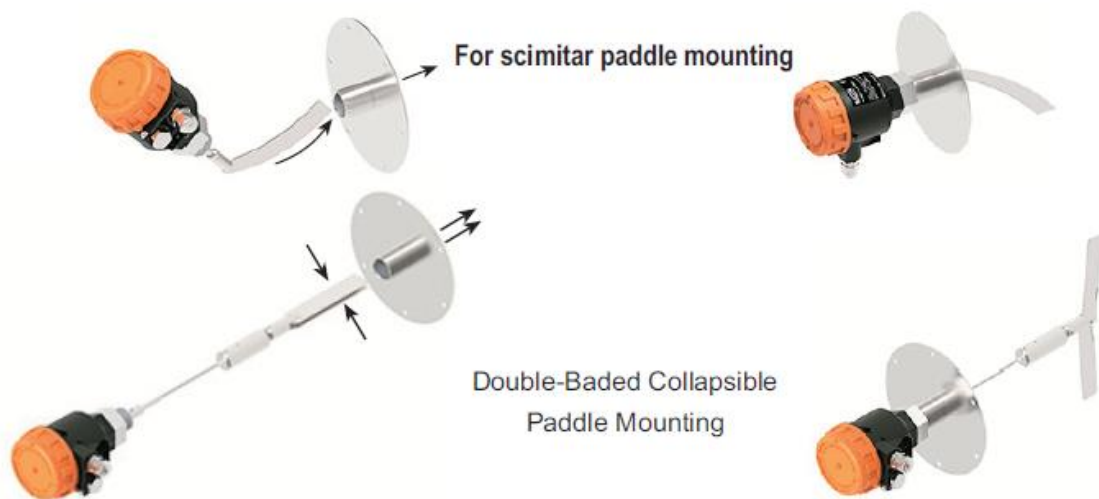
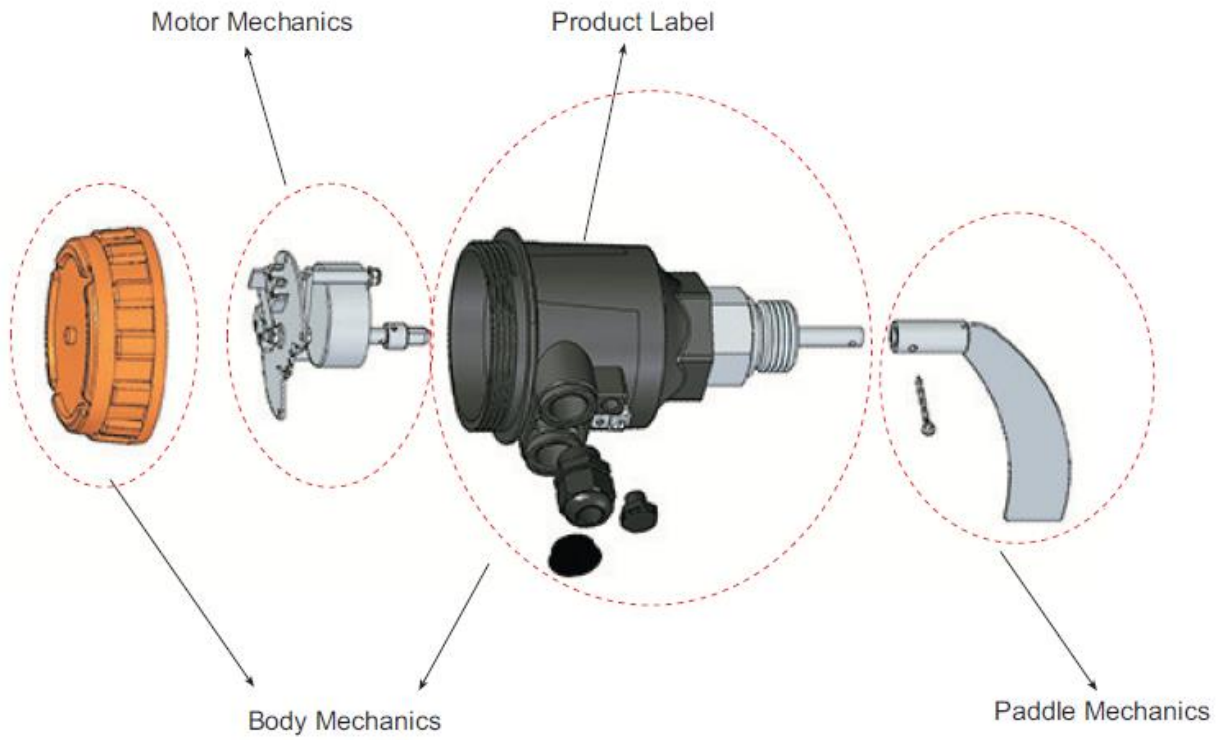
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Note : It has been produced according to IPC A 600 class 2 conditions and tested with 100 % E-test. Moreover, HASL (non-lead) surface test has been applied.

MODULAR STRUCTURE

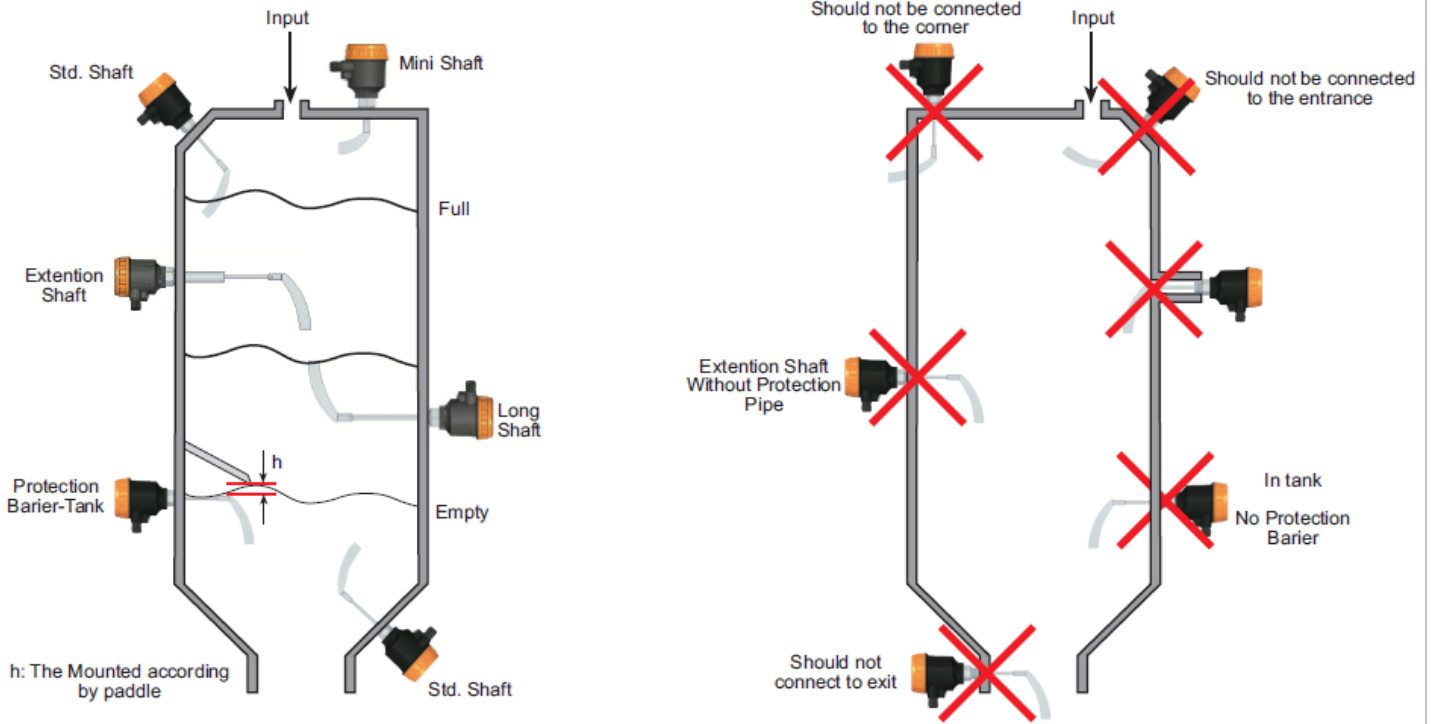


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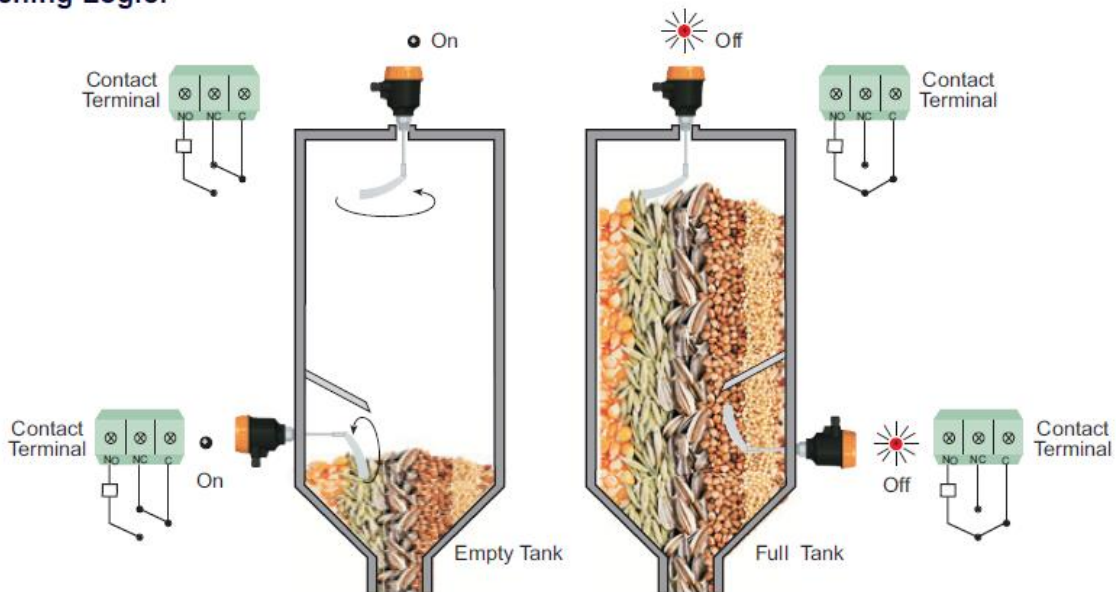
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EXAMPLE MOUNTING TYPES

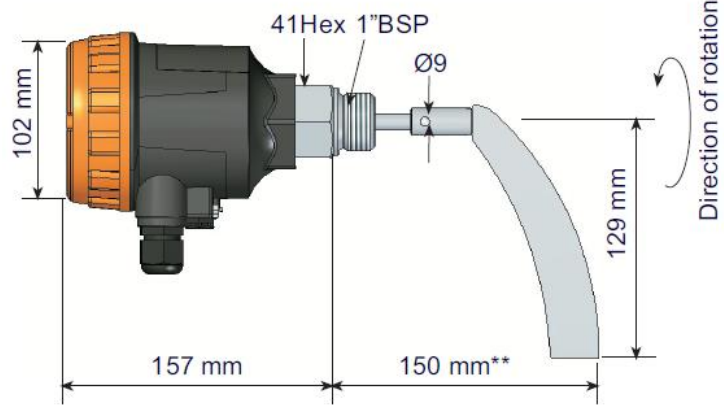


Switching Logic:



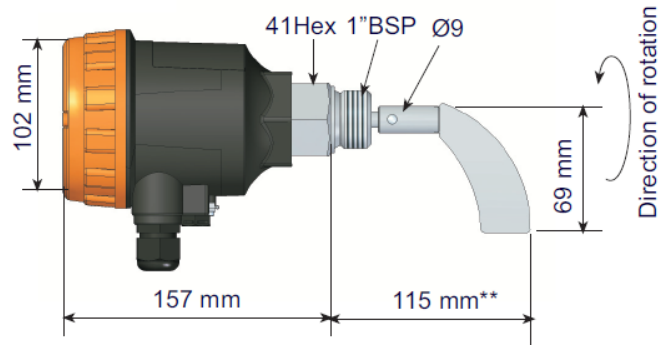
Working Position	Supply	Motor Position	Output Position	Alarm LED Position
Normaly Working	Yes	Stop	-	On light
	Yes	Stop	Full	On light
During an Alarm	Yes	Stop	Full	On light
	Yes	-	Full	Uninspiring

ELF 101



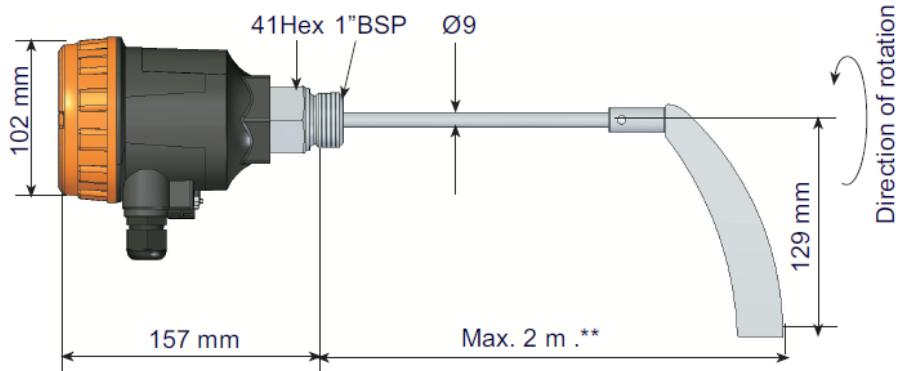
90°C Opt. 150°C
Vertical / Horizontal Mounting
Weight : 1.1 kg

ELF 102



90°C Opt. 150°C
Vertical / Horizontal Mounting
Weight : 1 kg

ELF 103



90°C Opt. 150°C
Vertical Mounting
Weight : 1.1 kg

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** Tolerance -/+ 5 mm .

PADDLE SHAPES

Standard Scimitar Paddle
(258mm)



Weigh 105 gr.

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

Mini Scimitar Paddle
(138mm)



Weigh 75 gr.

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

Double-Baded Collapsible Paddle
(265mm)



Weigh 235 gr.

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

Double-Baded Collapsible Paddle
(540mm)



Weigh 120 gr.

Paddle 11 (Plexiglass)

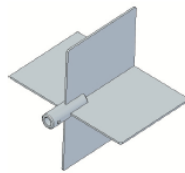
Cross-Wing Paddle
(105x90mm)



Weigh 185 gr.

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

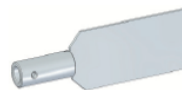
Cross-Wing Paddle
(148x98mm)



Weigh 515 gr.

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

Single Wing Paddle
(75x35mm)



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

Single Wing Paddle
(80x65mm)



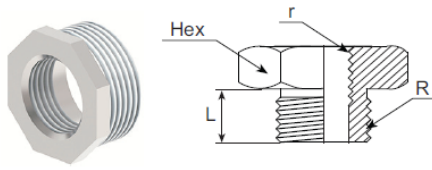
Paddle 14 (304 St.St.)
Paddle 15 (316 St.St.)

APPLICABLE SAMPLE MATERIALS AND DENSITY

Material	Min.Density (Kg/m ³)	Material	Min.Density (Kg/m ³)
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

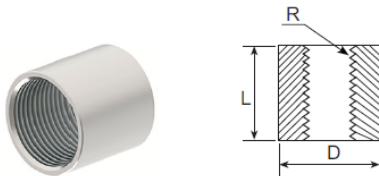
ACCESSORIES

Reduction :



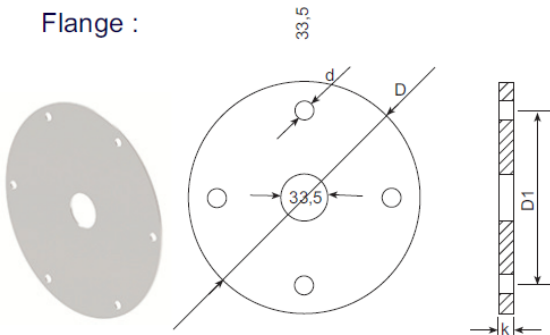
Order Code	R	r	L mm	Hex	Material
/ R1	1"BSP	1 1/4" BSP	21	44	304 St.St.
/ R2	1"BSP	1 1/2" BSP	19	50	304 St.St.
/ R7	1"BSP	2" BSP	25	60	304 St.St.
/ R3	1"BSP	1 1/4" BSP	21	44	316 St.St.
/ R4	1"BSP	1 1/2" BSP	19	50	316 St.St.
/ R5	1"BSP	1 1/4" BSP	22	45	ST 37 Steel
/ R6	1"BSP	1 1/2" BSP	22,5	50	ST 37 Steel

Muff :



Order Code	R	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

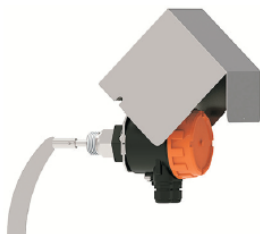
Flange :



Order Code	D	D1	d	k	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

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ORDER CODE

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= 2m.(For High Temperature).....6
Mini Shaft - L= 75 mm.....2	Mini-Shaft With Extention Tube - L= 150mm Max.500.....6m
Long Shaft - L= 500 mm3	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 mm4	Reinforced Rope (28 KN) - L= Max.10m.....9
Cable Extented Shaft - L= 500 mm.....5	Special.....x

4 PADDLE TYPE

Without Paddle (184mm)0	Cross-Wing Paddle (210mm).....5
Standart Scimater Paddle (258mm).....1	Cross-Wing Paddle (298 mm).....6
Mini Paddle (138mm).....2	Single Wing Paddle (80x65mm).....7
Double-Baded Collapsible Paddle (265mm).....3	Single Wing Paddle (74x35mm).....8
Double-Baded Collapsible Paddle-Plexiglass(540mm).....4	Special.....x

5 CONNECTION

* 1" BSP Male Thread (Std).....006	1 1/2" BSP Male Thread008
1 1/4" BSP Male Thread007	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 50/60Hz +/- %10.....4
24 VAC 50/60 Hz +/- %102	48 VAC 50/60Hz +/- %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/d2	

9 MMATERIAL 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	

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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.....02	Special.....x
Aluminum B20x.....25	

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 110mm 304 St.St...../ F1	Muff 1 1/2" ST 37 Steel...../ M9
Flange with muff 110mm 316 St.St...../ F2	M12 x 5 pin socket (Max. 60 V)...../ S1
Flange with muff 200mm 304 St.St...../ F3	External LED socket...../ L1
Flange with muff 200mm 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

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