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# Rotary Paddle Level Switch



# INTRODUCTION

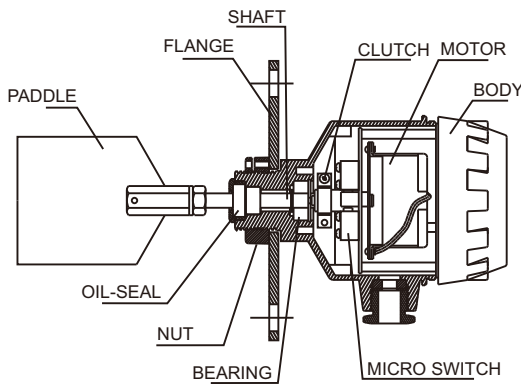
## WORKING PRINCIPLE

The purpose of the rotary paddle level switch is to detect the presence of solid/powdery material in most kinds of tanks, bins and containers. The unit is usually located through a bin wall at the top, middle or low level of a bin. During normal operation (no material present) a synchronous motor rotates the paddle at RPM. When this paddle rotation is impeded by material, surrounding the paddle, motor will stall and cause the Micro-switch to change state (indicating an alarm or control).

## APPLICATIONS

- Plastics and synthetics
- Chemicals and fertilizer
- Pharmaceuticals
- Food and beverage,
- Agriculture and fodder mills/depots
- Cement as well as ceramics
- Power plants
- Various incinerators

## STRUCTURE



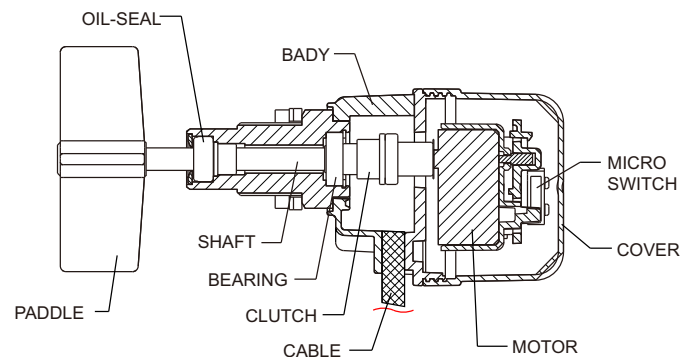
**STANDARD TYPE SE1**

## FEATURES

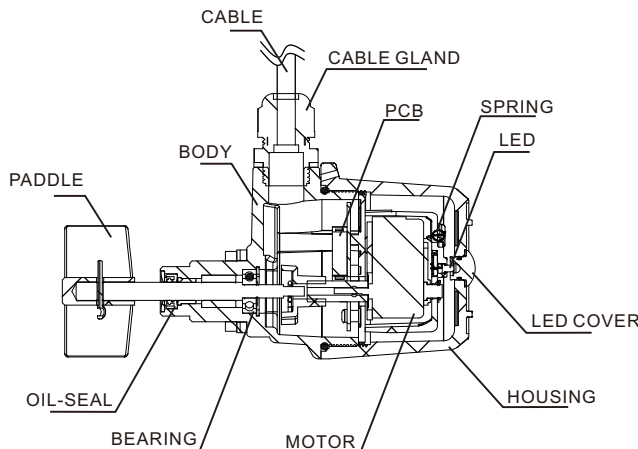
- Rugged sealing ring prevents dust from infiltrating the housing body along the shaft.
- Adjustable torque.  
If the rotary paddle encounters overloading, the motor will automatically shut down the motor to prevent damage to the inner mechanisms and extend motor life.
- Very suitable for small tanks and low density materials
- Adjustable and extendible shaft models available
- A wide variety of paddles are available

## BENEFITS

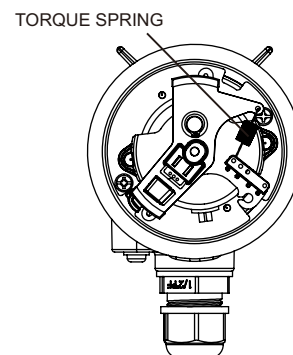
- Airtight sealed device.
- Outdoor and strenuous environment application
- Stable and reliable performance.
- Lightweight and easy to install
- Practically designed to allow maintenance, checks and replacement
- Not necessary to remove the complete set from the tank.



**MINI TYPE SE2**



**MINI TYPE SE3**



# STANDARD TYPE

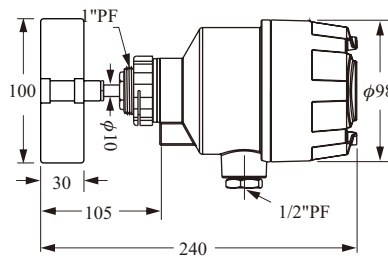
- **Power source** : (A)110Vac,(B)220Vac,(C)240Vac, (D)24Vac, 50/60Hz (E)24Vdc
- **Power consumption** : 3W, 11W(DC24V)
- **Contact capacity** : SPDT, 5A/250Vac
- **Rotary speed** : 1 R.P.M.
- **Insulation test voltage** : 2500V
- **Connection** : 1"PF screw or JIS 2-1/2" x 5kg<sup>2</sup>/cm flange
- **Protection/ material** : IP65 / ADC-12
- **Conduit** : 1/2"PF
- **Material density** : 0.5 g/cm<sup>3</sup>

## SCREW TYPE

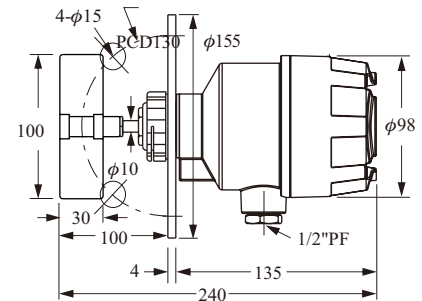
### SE110 Series

- Horizontal mounting
- Operation Temperature (-20°C ~ 70°C)
- Weight: 1.2 kg

**SE110 Series**



**SE111 Series**



## FLANGE TYPE

### SE111 Series

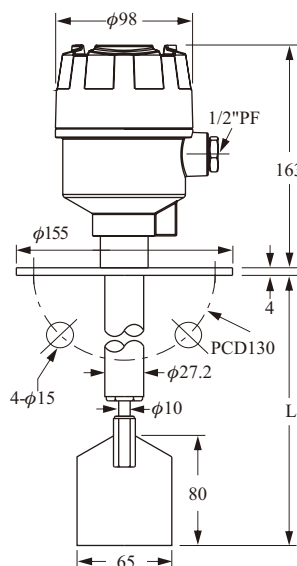
- Horizontal mounting
- Operation Temperature (-20°C ~ 70°C)
- Weight: 1.7 kg

## SHAFT PROTECTIVE TUBE TYPE

### SE120 Series

- Horizontal /Vertical mounting
- Operation Temperature (-20°C ~ 70°C)
- Weight: 1.2 kg
- Standard Length:
  - L--250mm (2.2 kg)
  - L--500mm (2.5 kg)
  - L--750mm (2.8 kg)
- Customized lengths available

**SE120 Series**

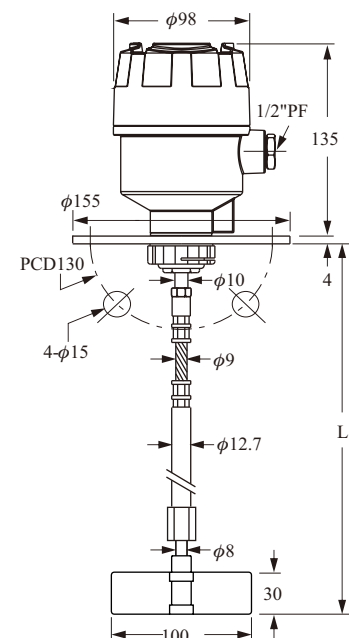


**SE130 Series**

## SHAFT LENGTH ADJUSTABLE TYPE

### SE130 Series

- Vertical mounting
- Operation Temperature (-20°C ~ 70°C)
- Standard Length:
  - L- 460~630mm (2.5 kg)
  - L- 650~1000mm (2.8 kg)
  - L- 760~1200mm (3.0 kg)
- Customized lengths available



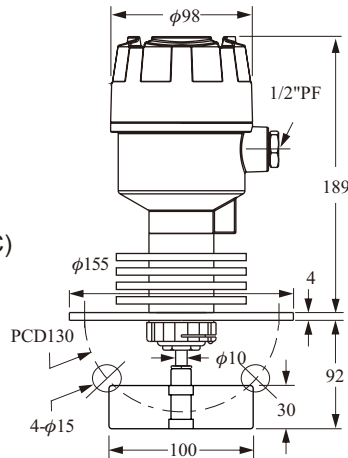
# STANDARD TYPE

## HI-TEMP TYPE

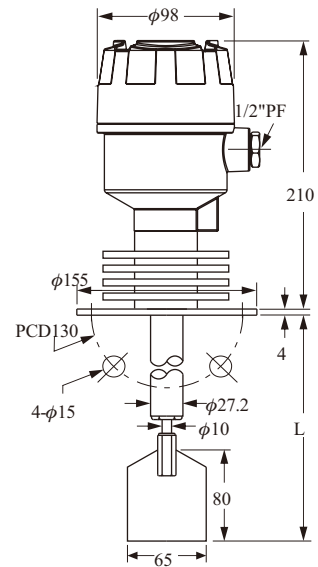
### SE140 Series

- Horizontal mounting
- Temp. (-20°C ~ 200°C)
- Weight: 2.1 kg

### SE140 Series



### SE141 Series



## HI-TEMP TYPE

### PROTECTIVE TUBE TYPE

### SE141 Series

- Horizontal /Vertical mounting
- Operation Temperature (-20°C ~ 200°C)
- Standard Length (option):
  - L--250mm (2.6 kg)
  - L--500mm (2.9 kg)
  - L--750mm (3.2 kg)
- Special length is made by order

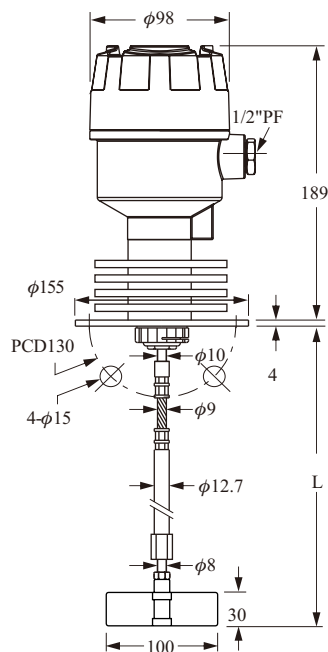
## HI-TEMP SHAFT

### LENGTH ADJUSTABLE TYPE

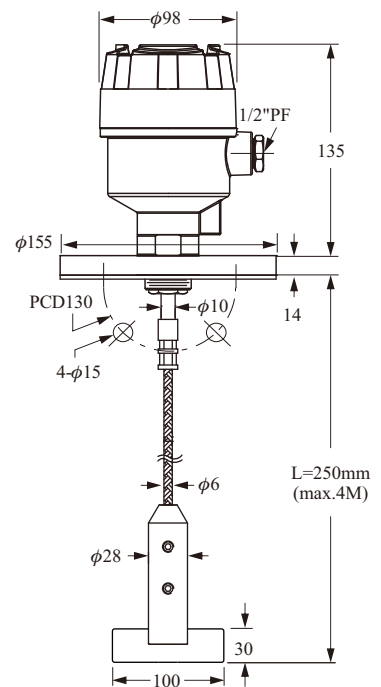
### SE146 Series

- Vertical mounting
- Operation Temperature (-20°C ~ 200°C)
- Standard Length (option):
  - L- 450~630mm (3 kg)
  - L- 650~1000mm (3.3 kg)
  - L- 760~1200mm (3.5 kg)
- Special length is made by order

### SE146 Series



### SE160 Series



## CABLE WIRE TYPE

### SE160 Series

- Vertical mounting
- Operation Temperature (-20°C ~ 70°C)
- Standard Length (option):
  - L-- 450mm (2.5 kg)
  - L-- 650mm (2.8 kg)
  - L-- 750mm (3 kg)
- Special length is made by order

# ORDER INFORMATION

SEX1 <sup>⑤</sup> <sup>⑥</sup>   0 0 - A <sup>⑩</sup> <sup>⑪</sup> <sup>⑫</sup> <sup>⑬</sup> <sup>⑭</sup> <sup>⑮</sup> <sup>⑯</sup> <sup>⑰</sup> <sup>⑱</sup> <sup>⑲</sup> <sup>⑳</sup> <sup>㉑</sup> <sup>㉒</sup>

⑤ ⑥ **Model**

- 00: Standard
- 02: Hi-temperature

⑩ **Construction**

- A: General type
- B: Shaft protective tube type
- C: Shaft length adjustable type
- D: Cable wire type

⑪ **Power supply**

- A: AC110V                    D: AC24V
- B: AC220V                 E: DC24V
- C: AC240V

**Connection**

⑫ ⑬

- Flange item
- AK: JIS-FF
- AN: ANSI-RF
- AS: DIN-FF
- BC: Standard thin flange  
(Suitable for 2-1/2" dimension)

⑭ ⑮

- A8: 1"
- B1: 1-1/2"
- B2: 2"
- B4: 2-1/2"

⑰ ⑱

- 01: PT male
- 03: PF male
- 07: NPT male
- 39: 5 kg/cm<sup>2</sup>x4T(Thin flange)
- 40: 5 kg/cm<sup>2</sup>
- 42: 10 kg/cm<sup>2</sup>
- 48: 150 Lbs
- 49: 300 Lbs
- 57: PN10
- 58: PN16

⑱ **Paddle model**

- A: None
- B: 100x30(WxH)
- C: 65x80(WxH)
- F: 50x30(WxH)
- G: Scimitar type 132x100(WxH)
- H: Folding type 200x28(WxH)

⑲ ⑳ ㉑ ㉒ **Length**

Code	Length range
0001~4000	0001~4000mm



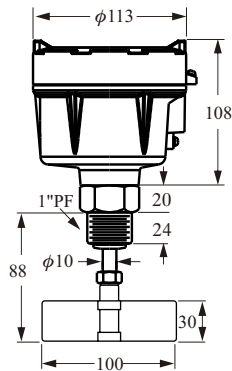
# EXPLOSION PROOF TYPE

- **Power source** : (A)110Vac, (B)220Vac, (C)240Vac  
(D)24Vac, 50/60Hz
- **Power consumption** : 3W
- **Contact capacity** : SPDT, 3A/250Vac
- **Rotary speed** : 1 R.P.M.
- **Insulation test voltage** : AC 1500V × 1minute

- **Connect** : 1"PF screw or flange 1"~6"  
2-1/2" × 5kg/cm<sup>2</sup> (std.)
- **Housing material** : AL Alloy, ADC-12
- **Conduit** : 1/2" (std.) or 3/4"NPT
- **Material density** : 0.5 g/cm<sup>3</sup>

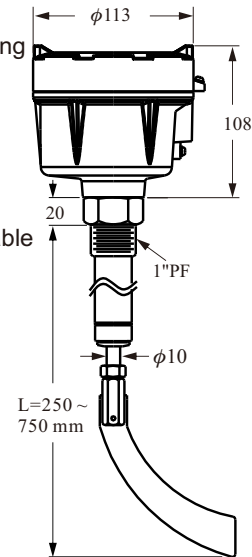
## EXPLOSION PROOF CONNECTION TYPE SE170 series

- Horizontal mounting
- Temp. (-20°C ~ 70°C)



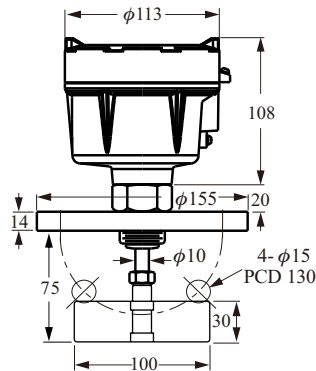
## EXPLOSION PROOF SHAFT PROTECTION TYPE SE172 series

- Horizontal /Vertical mounting
- Temp. (-20°C ~ 70°C)
- Standard Length (option):  
L-- 250mm  
L-- 500mm  
L-- 750mm
- Customized lengths available



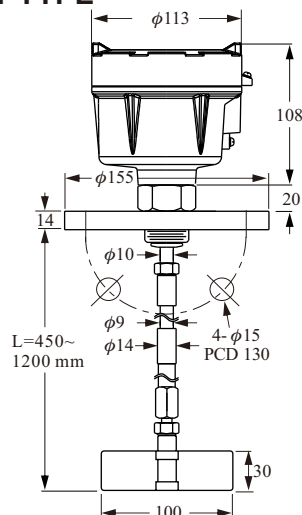
## EXPLOSION PROOF FLANGE TYPE SE171 series

- Horizontal mounting
- Temp. (-20°C ~ 70°C)



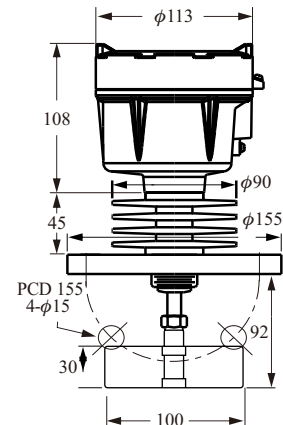
## EXPLOSION PROOF ADJUSTABLE SHAFT TYPE SE173 series

- Vertical mounting
- Temp. (-20°C ~ 70°C)
- Standard Length (option):  
L-- 450 ~630mm  
L-- 650 ~1000mm  
L-- 760 ~1200mm
- Special length is made by order



## EXPLOSION PROOF HI-TEMP TYPE SE174 series

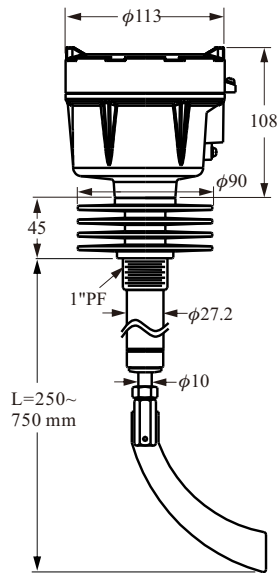
- Horizontal mounting
- Temp. (-20°C ~ 200°C)



# EXPLOSION PROOF TYPE

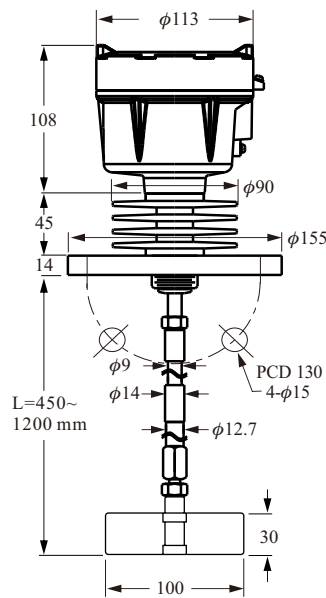
## EXPLOSION PROOF HI-TEMP SHAFT PROTECTIVE TUBE TYPE SE175 Series

- Horizontal /Vertical mounting
- Temp. (-20°C ~ 200°C)
- Special length is made by order



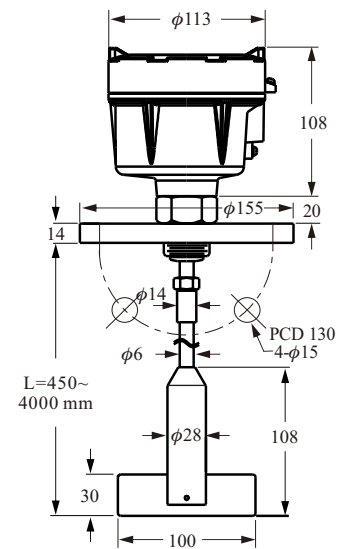
## EXPLOSION PROOF HI-TEMP ADJUSTABLE SHAFT TYPE SE176 Series

- Vertical mounting
- Temp. (-20°C ~ 200°C)
- Special length is made by order

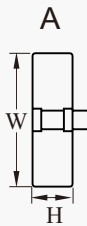


## EXPLOSION PROOF CABLE WIRE TYPE SE177 Series

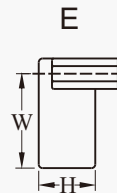
- Vertical mounting
- Temp. (-20°C ~ 70°C)
- Special length is made by order



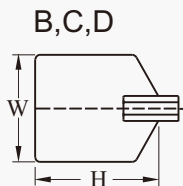
## ■ Paddle Introduction



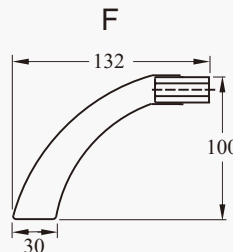
(A) 100x30 (WxH), Min. fixed hole diameter size φ90mm.



(E) 50x30 (WxH), Suitable for high S.G. raw materials. Use a small size paddle to decrease the impact of material falling directly on paddle.



(B) 65x80 (WxH), Directly mounted into 2\"/>



(F) Scimitar model paddle, Screw tightly on the 1\"/>

# ORDER INFORMATION

SEX3 <sup>05</sup> <sup>06</sup> <sup>07</sup> <sup>08</sup> -A <sup>10</sup> <sup>11</sup> <sup>12</sup> <sup>13</sup> <sup>14</sup> <sup>15</sup> <sup>16</sup> <sup>17</sup> <sup>18</sup> <sup>19</sup> <sup>20</sup> <sup>21</sup> <sup>22</sup>

<sup>05</sup> <sup>06</sup> **Model**

- 00: Standard
- 02: Hi-temperation

<sup>07</sup> <sup>08</sup> **Certification**

- 1C: ATEX-Exd
- 5C: TS-Exd
- 7C: NEPSI-Exd

<sup>10</sup> **Construction**

- A: General type
- B: Shafe protective tube type
- C: Shafe length adjustable type
- D: Cable wire type

<sup>11</sup> **Power supply**

- A: AC110V
- B: AC220V
- C: AC240V
- D: AC24V

**Connection**

<sup>12</sup> <sup>13</sup>

- Flange item
- AK: JIS-FF
- AN: ANSI-RF
- AS: DIN-FF

<sup>14</sup> <sup>15</sup>

- A8: 1"
- B1: 1-1/2"
- B2: 2"
- B4: 2-1/2"

<sup>16</sup> <sup>17</sup>

- 01: PT male
- 03: PF male
- 07: NPT male
- 40: 5 kg/cm<sup>2</sup>
- 42: 10 kg/cm<sup>2</sup>
- 48: 150 Lbs
- 49: 300 Lbs
- 57: PN10
- 58: PN16

Thread item

- AA: JIS
- AC: ANSI

<sup>18</sup> **Paddle model**

- A: None
- B: 100x30(WxH)
- C: 65x80(WxH)
- F: 50x30(WxH)
- G: Scimitar type 132x100(WxH)

<sup>19</sup> <sup>20</sup> <sup>21</sup> <sup>22</sup> **Length**

Code	Length range
0001~4000	0001~4000mm



# MINI TYPE(ALUMINUM ALLOY COVER)

Housing cover code:  
 0: Aluminum cover  
 1: Aluminum cover with LED lamp

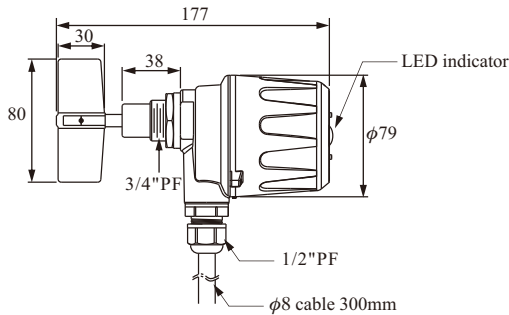
- **Power source** : (A)110Vac,(B)220Vac,(C)240Vac, (D)24Vac, 50/60Hz,(E)24Vdc
- **Power consumption** : 1.5W
- **Contact capacity** : 5A/250Vac, 5A/30Vdc
- **Rotary speed** : 1R.P.M.
- **IP rating** : IP65

- **Housing material** : Aluminum alloy
- **Ambient temperature** : -40°C ~ 85°C
- **Cable length** : 300mm (available for custom length)
- **Material density** : 0.3 g/cm<sup>3</sup>
- **Display status** : Green(Working), Red(Stopped)

## STANDARD TYPE

SE38□0 Series

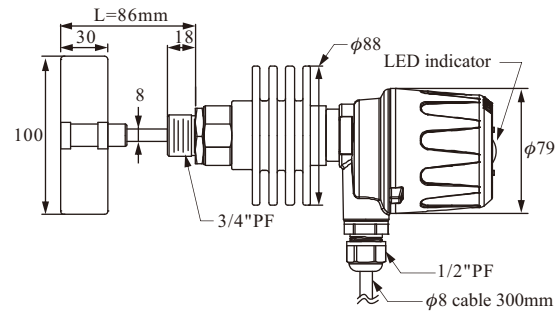
- Operation temperature: -40°C ~ 85°C
- Paddle material: PC



## HIGH TEMPERATURE TYPE

SE38□4 Series

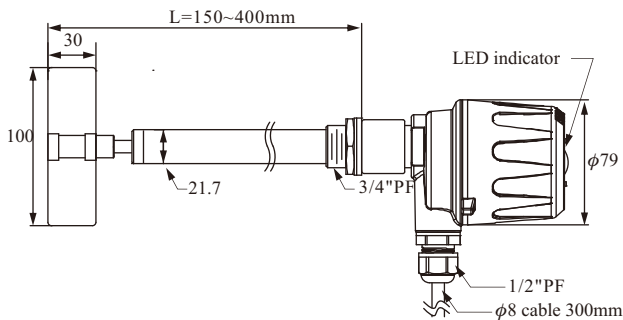
- Operation temperature: -40°C ~ 200°C
- Paddle material: SUS304



## SHAFT PROTECTIVE TUBE TYPE

SE38□2 Series

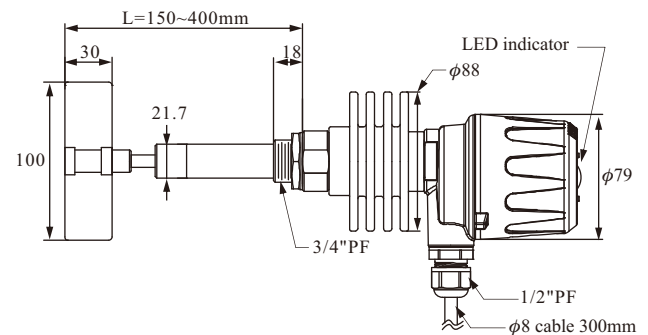
- Operation temperature: -40°C ~ 85°C
- Paddle material: SUS304



## HIGH TEMPERATURE SHAFT PROTECTIVE TUBE TYPE

SE38□5 Series

- Operation temperature: -40°C ~ 200°C
- Paddle material: SUS304



# MINI TYPE(EXPLOSION PROOF)

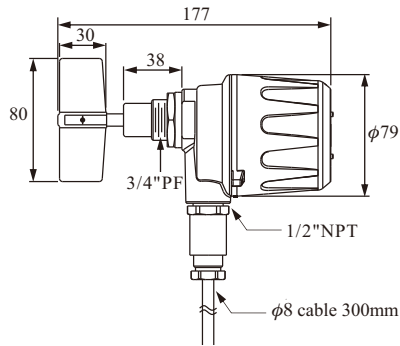
NEPSI PROOF No.GYJ14.1148  
DIP A20/21 T<sub>A</sub>, T3~T6 IP65

- **Power source** : (A)110Vac,(B)220Vac,(C)240Vac,  
(D)24Vac, 50/60Hz,(E)24Vdc
- **Power consumption** : 1.5W
- **Contact capacity** : 5A/250Vac, 5A/30Vdc
- **Rotary speed** : 1R.P.M.
- **IP rating** : IP65

- **Housing material** : Aluminum alloy
- **Ambient temperature** : -40°C ~ 85°C
- **Cable length** : 300mm (available for custom length)
- **Material density** : 0.3 g/cm<sup>3</sup>

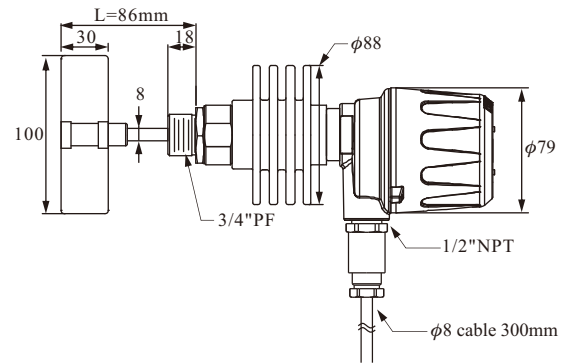
## STANDARD TYPE SE3700 Series

- Operation temperature: -40°C ~ 85°C
- Paddle material: PC



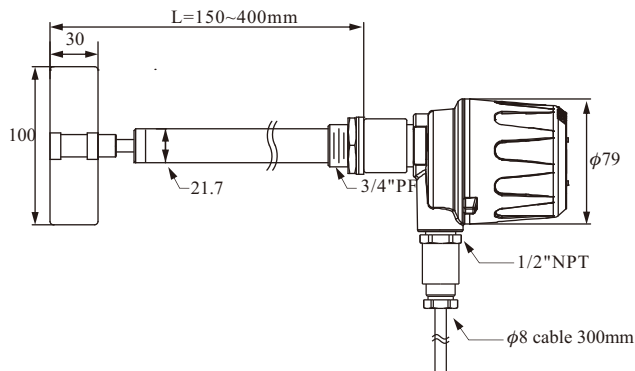
## HIGH TEMPERATURE TYPE SE3704 Series

- Operation temperature: -40°C ~ 200°C
- Paddle material: SUS304



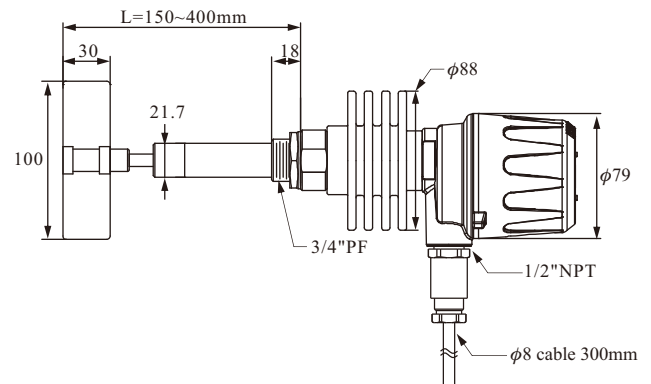
## SHAFT PROTECTIVE TUBE TYPE SE3702 Series

- Operation temperature: -40°C ~ 85°C
- Paddle material: SUS304



## HIGH TEMPERATURE SHAFT PROTECTIVE TUBE TYPE SE3705 Series

- Operation temperature: -40°C ~ 200°C
- Paddle material: SUS304



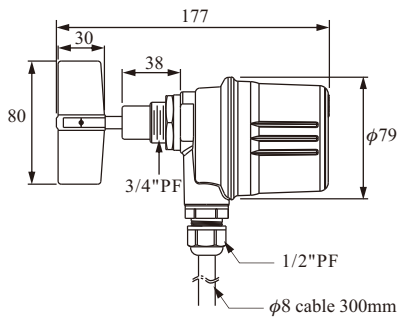
# MINI TYPE(PLASTIC COVER)

- **Power source** : (A)110Vac,(B)220Vac,(C)240Vac,  
(D)24Vac, 50/60Hz,(E)24Vdc
- **Power consumption** : 1.5W
- **Contact capacity** : 5A/250Vac, 5A/30Vdc
- **Rotary speed** : 1R.P.M.
- **IP rating** : IP65

- **Housing material** : Plastic cover
- **Ambient temperature** : -40°C ~ 85°C
- **Cable length** : 300mm (available for custom length)
- **Material density** : 0.3 g/cm<sup>3</sup>

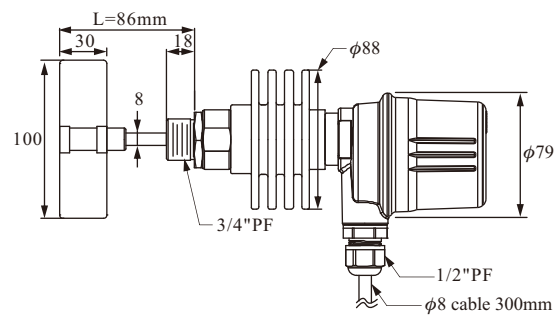
## STANDARD TYPE SE3820 Series

- Operation temperature: -40°C ~ 85°C
- Paddle material: PC



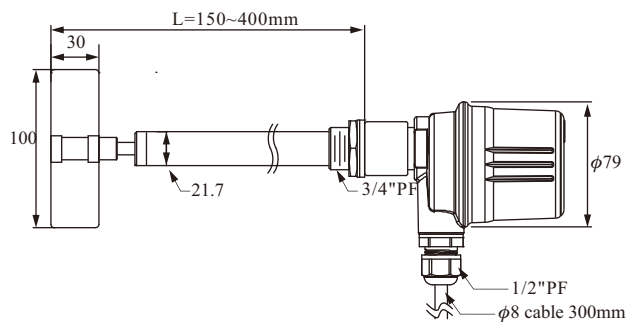
## HIGH TEMPERATURE TYPE SE3824 Series

- Operation temperature: -40°C ~ 200°C
- Paddle material: SUS304



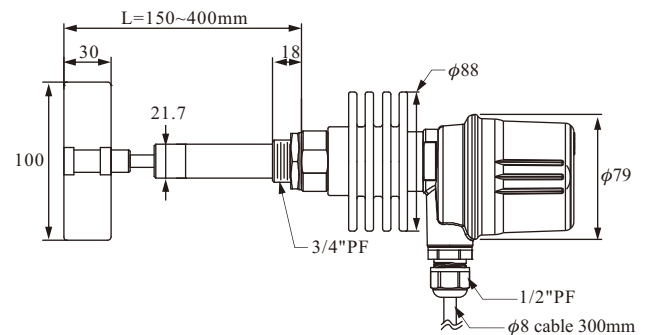
## SHAFT PROTECTIVE TUBE TYPE SE3822 Series

- Operation temperature: -40°C ~ 85°C
- Paddle material: SUS304



## HIGH TEMPERATURE SHAFT PROTECTIVE TUBE TYPE SE3825 Series

- Operation temperature: -40°C ~ 200°C
- Paddle material: SUS304



# ORDER INFORMATION

SEX2 ⑤ ⑥ ⑦ ⑧ - ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰ ⑱ ⑲ ⑳ ㉑ ㉒ ㉓ ㉔ ㉕ ㉖

⑤⑥ **Model**

- 00: Standard
- 02: Hi-temperation

⑦⑧ **Certification**

- 00: None
- 7D: NEPSI-Exd

⑨ **Housing**

- A: Aluminum cover (only explosion-proof optional)
- B: Aluminum cover with LED lamp
- C: Plastic cover

⑩ **Construction**

- A: General type
- B: Shafe protective tube type

⑪ **Power supply**

- A: AC110V
- B: AC220V
- C: AC240V
- D: AC24V
- E: DC24V

**Connection**

⑫⑬

- Flange item
- AK: JIS-FF
- AN: ANSI-RF
- AS: DIN-FF

⑭⑮

- A7: 3/4"
- A8: 1"
- B1: 1-1/2"
- B2: 2"

⑯⑰

- 01: PT male
- 03: PF male
- 07: NPT male
- 40: 5 kg/cm<sup>2</sup>
- 42: 10 kg/cm<sup>2</sup>
- 48: 150 Lbs
- 49: 300 Lbs
- 57: PN10
- 58: PN16

Thread item

- AA: JIS
- AC: ANSI

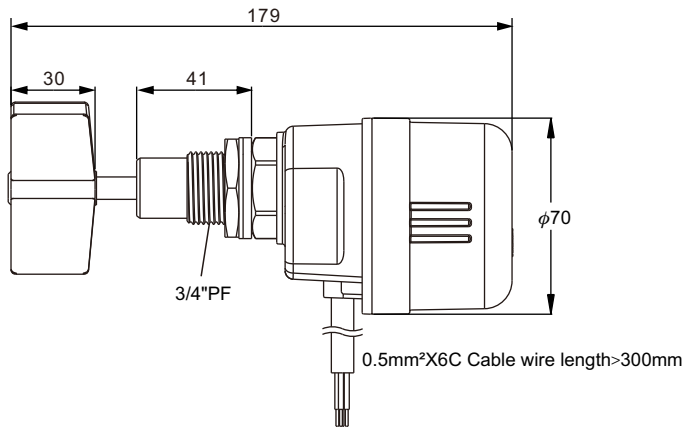
(Next page)

## MINI TYPE(ECONOMY)

- **Power source** : (A)110Vac,(B)220Vac,  
(D)24Vac, 50/60Hz
- **Power consumption** : 1.5W
- **Contact capacity** : 3A/250Vac, 3A/30Vdc
- **Rotary speed** : 1R.P.M.
- **IP rating** : IP65
- **Housing material** : Plastic cover
- **Ambient temperature** : -10°C ~ 80°C
- **Cable length** : 300mm (available for custom length)
- **Material density** : 0.3 g/cm<sup>3</sup>

## STANDARD SE290 A/B/D

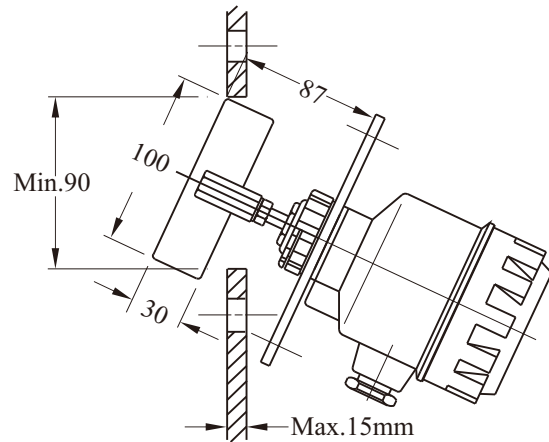
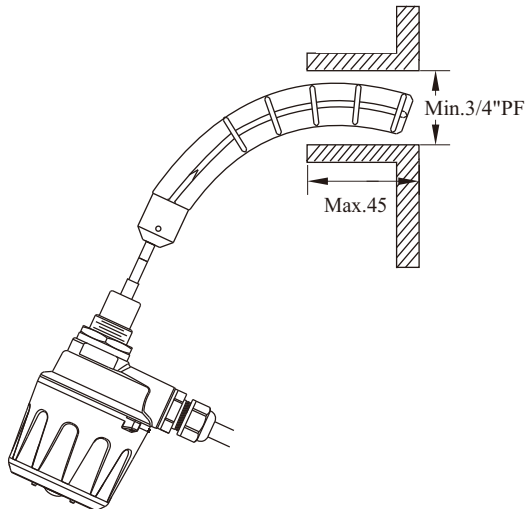
- Operation temperature: -20°C ~ 70°C
- Paddle material: PC



## MOUNTING EXAMPLES

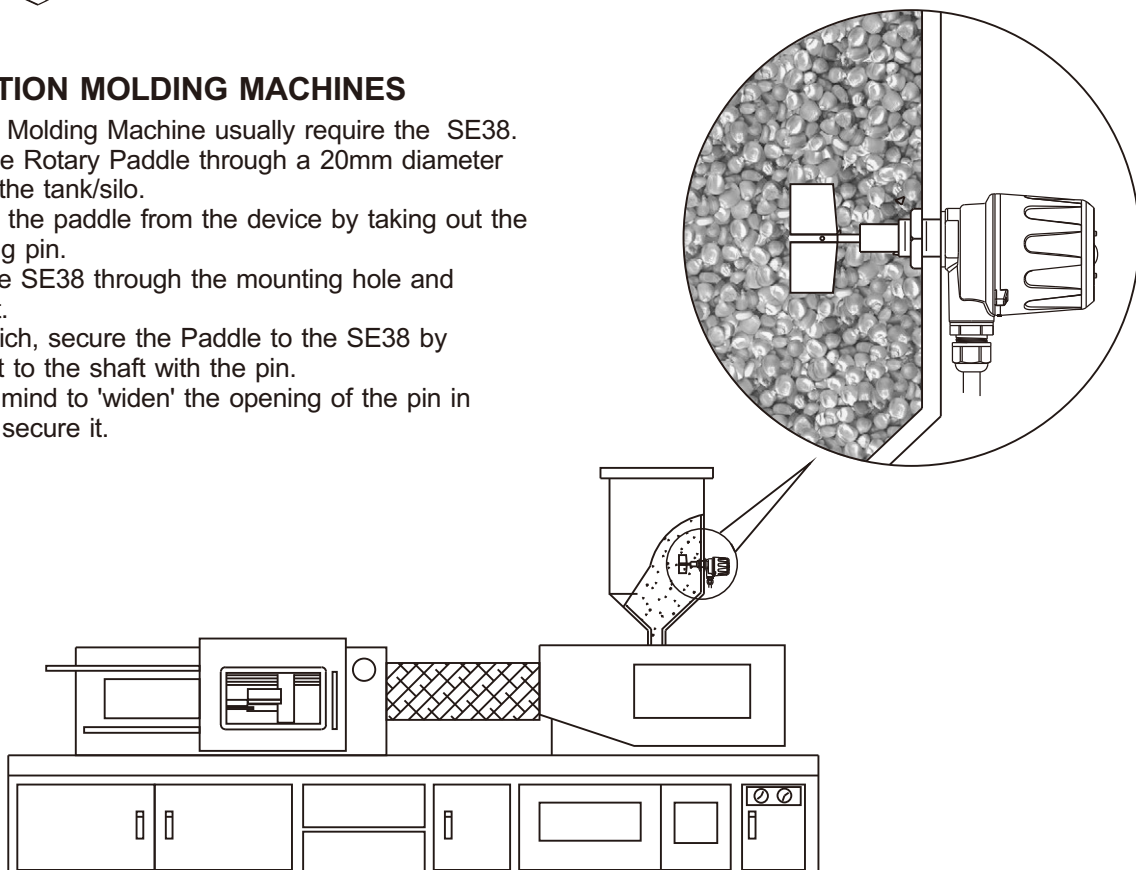
Regular models such as the SE11 should be installed directly on the tank side.  
Mount at a 35° angle the blade through the tank opening or hole sliding the blade in first.

\* The SE170 series minimum hole size should be 95mm in diameter.  
The scimitar model is directly installed on the tank wall method as shown below.  
(Assuming an arc-shaped tank with a 3/4" connection) and then screwing it tight.



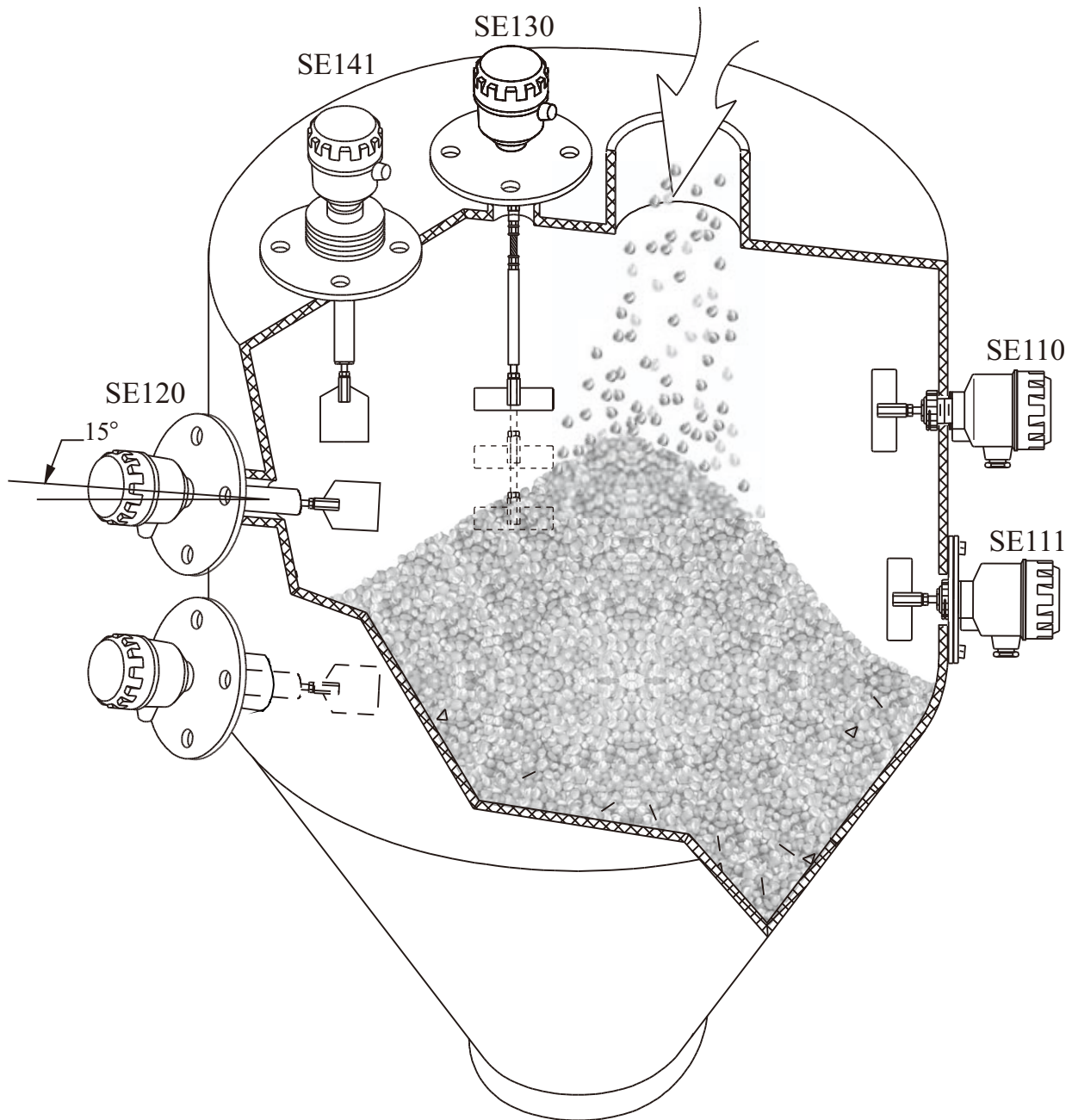
## INJECTION MOLDING MACHINES

Injection Molding Machine usually require the SE38.  
Install the Rotary Paddle through a 20mm diameter hole on the tank/silo.  
Remove the paddle from the device by taking out the fastening pin.  
Insert the SE38 through the mounting hole and tighten it.  
After which, secure the Paddle to the SE38 by locking it to the shaft with the pin.  
Keep in mind to 'widen' the opening of the pin in order to secure it.





## EXAMPLES



### INSTALLATION NOTICES

1. Side mount the sensor at a downward angle of  $15^{\circ}$  ~  $20^{\circ}$  to decrease the material inflow impact.
2. For high temperature application (more than  $70^{\circ}\text{C}$ ), please use the SE14□ Series.
3. For SE110~SE140 using a 1" inlet, please apply the scimitar model and screw directly.
4. For SE130, SE146 series have flexible and extendible shafts.
5. Please ensure the lead wire enters the housing from the bottom and the nuts are fastened to secure the device.