Rotary Paddle Level Switch

www.fine-tek.com

FineTek

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).

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

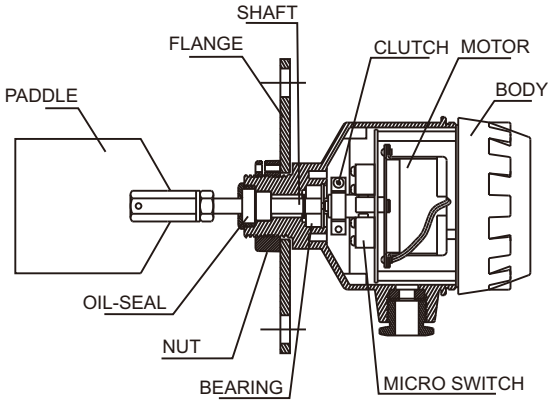
APPLICATIONS

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

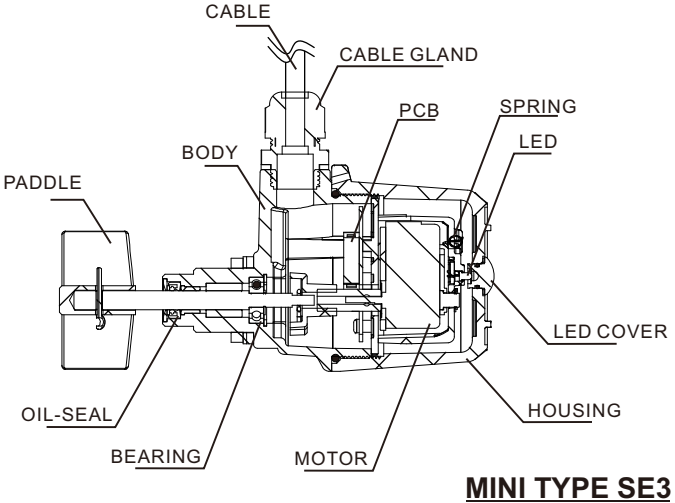
BENEFITS

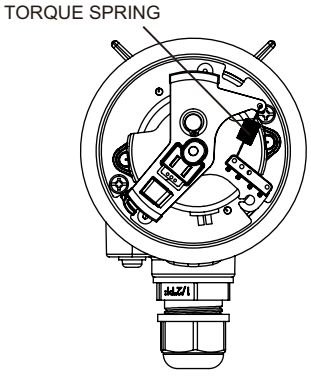
- Airtight sealed device.
- Outdoor and strenuous environment application
- Stable and reliable performance.
- Lightweight and easy to install
- Practically designed to allow maintenance, checks and replacement
- Not necessary to remove the complete set from the tank.

STRUCTURE



STANDARD TYPE SE1





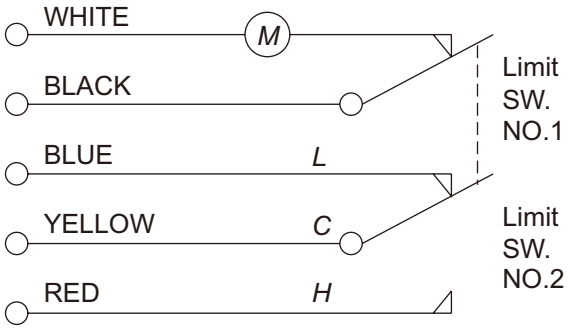
MINI TYPE SE3

FineTek

WORKING PRINCIPLE & TORQUE ADJUSTING

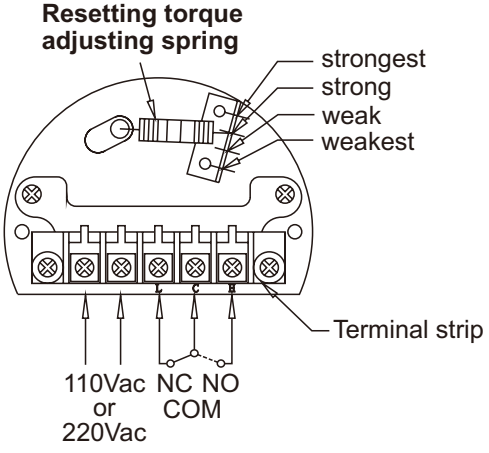
CONTROL SWITCH WORKING PRINCIPLE

1. A synchronous turning motor indicates the tank or container's material isn't obstructing the paddles,C & L [COM & NC] are connected.
2. When the material is obstructing the paddles, C&L [COM & NC] are disconnected, C&H [COM & NO] are connected and the motor's current is cut off.
3. When the material drops away from the paddles and the motor starts again C & L [COM & NC] connect and the cycle has begun once again.

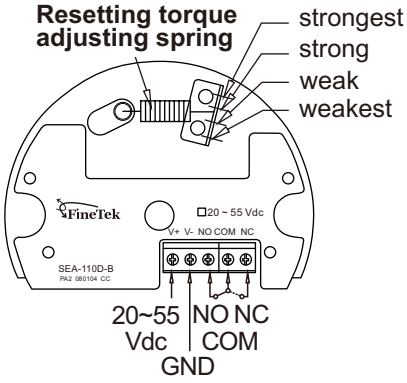


TORQUE ADJUSTING MECHANISM AND WIRING

The torque spring is applied to adjust the shaft output torque. Default settings aret "weak" and can be adjusted to the customer's target based on the tank contents and S.G. (special gravity) of the material.
Higher S.G. materials require stronger torque settings. Start with high settings and slowly release the torque force until the appropriate setting is found.



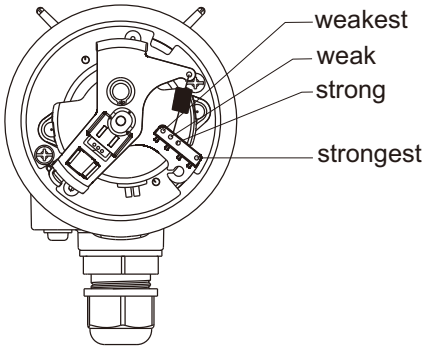
Available: SE110, 120, 130, 140, 160, 170

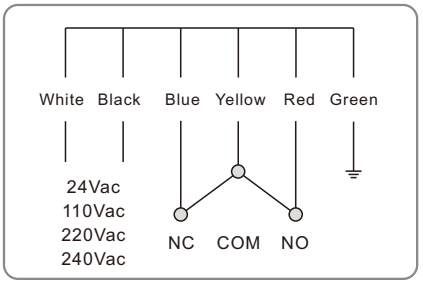


Available:SE110E

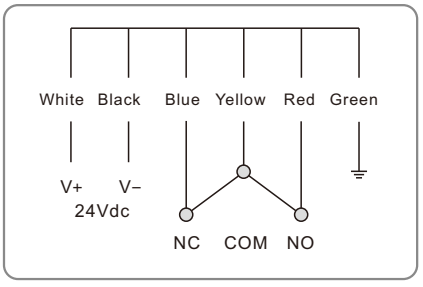
- Do not tamper with the spring as it may cause the Rotary Paddle to malfunction.

Spring adjusting hole





AC type



DC type

Available:SE3

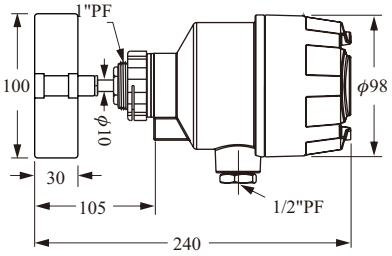
FineTek

STANDARD TYPE

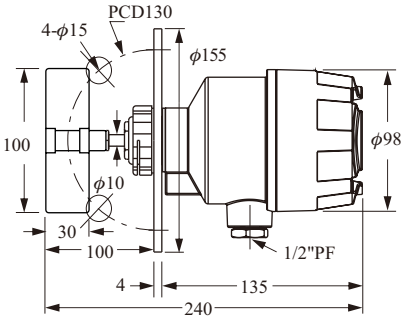
- **Power source :** (A)110Vac,(B)220Vac,(C)240Vac, (D)24Vac, 50/60Hz (E)24Vdc
- **Power consumption :** 3W, 11W(DC24V)
- **Contact capacity :** SPDT, 5A/250Vac
- **Rotary speed :** 1 R.P.M.
- **Insulation test voltage :** 2500V
- **Connection :** 1"PF screw or JIS 2-1/2" × 5kg/cm^2 flange
- **Protection/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

SCREW MODEL
SE110 Series
- Horizontal mounting
- Operation Temperature (-20°C ~ 70°C)
- Weight: 1.2 kg

SE110 Series



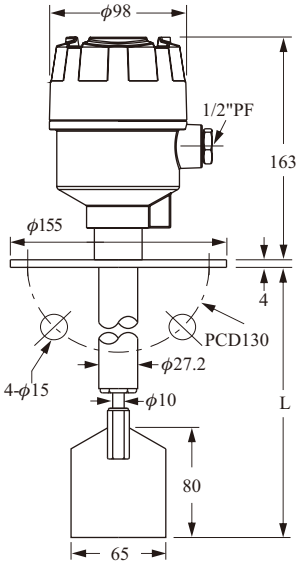
SE111 Series



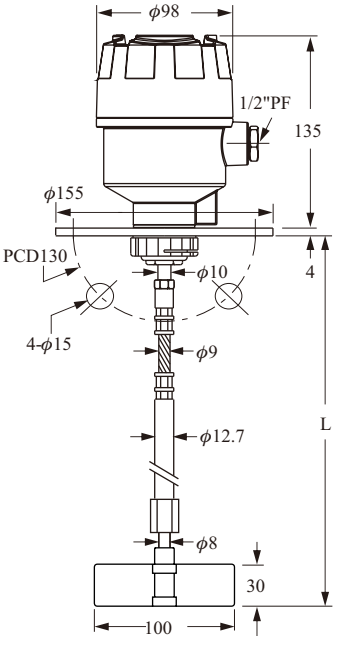
FLANGE MODEL
SE111Series
- Horizontal mounting
- Operation Temperature (-20°C ~ 70°C)
- Weight: 1.7 kg

SHAFT PROTECTIVE TUBE MODEL
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 MODEL
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

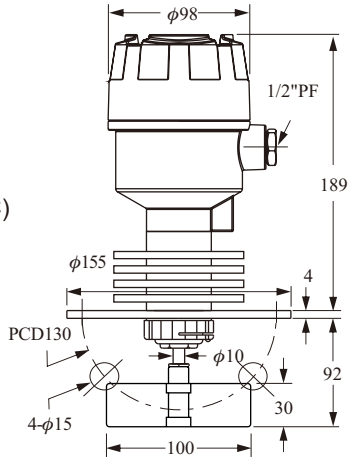
FineTek

STANDARD TYPE

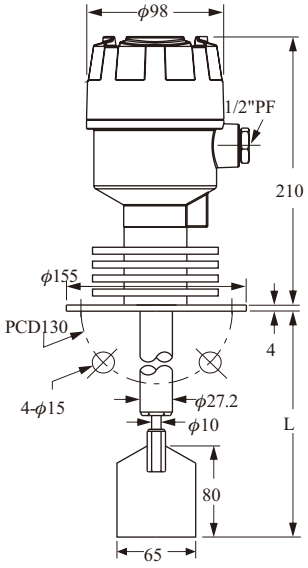
HI-TEMP TYPE
SE140A/B/C/D

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

SE140A/B/C/D Series



SE141A/B/C/D Series



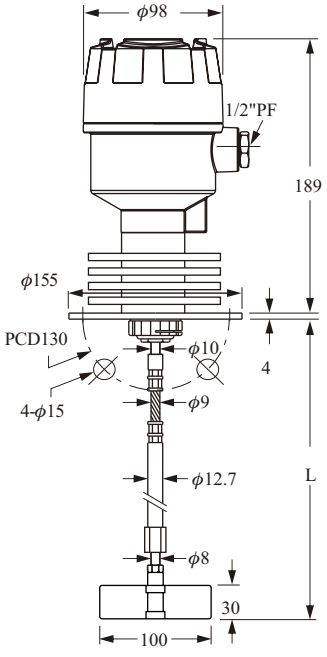
HI-TEMP TYPE
PROTECTIVE TUBE TYPE
SE141A/B/C/D/E

- 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

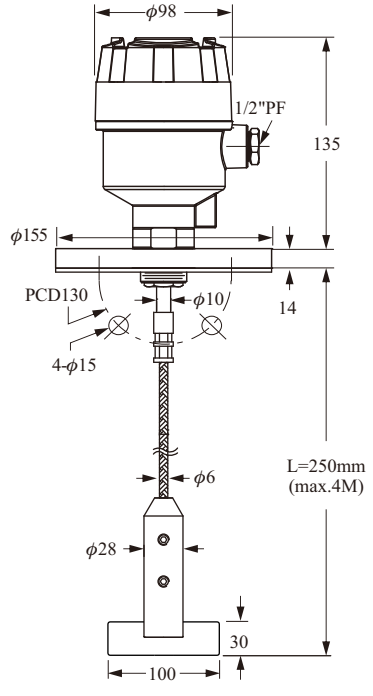
HI-TEMP SHAFT
LENGTH ADJUSTABLE TYPE
SE146A/B/C/D/E

- 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

SE146A/B/C/D/E Series



SE160A/B/C/D/E Series



CABLE WIRE TYPE
SE160A/B/C/D/E

- 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

FineTek

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

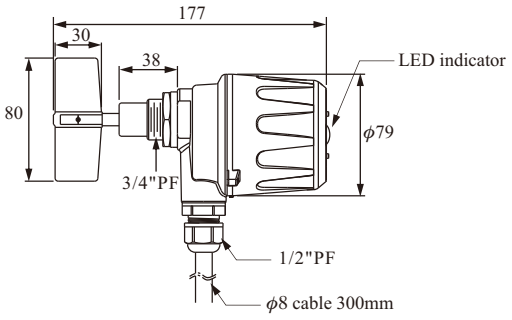
MINI TYPE(Aluminum alloy cover)

NEPSI PROOF No.GYJ14.1148 DIP A20/21 T\, 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 :** R.P.M.
- **IP rating :** IP65
- **Housing material :** Aluminum alloy
- **Ambient temperature :** -40℃ ~ 85℃
- **Cable length :** 300mm (available for custom length)
- **Material density :** 0.3
- **Display status :** Green(Working), Red(Stopped)

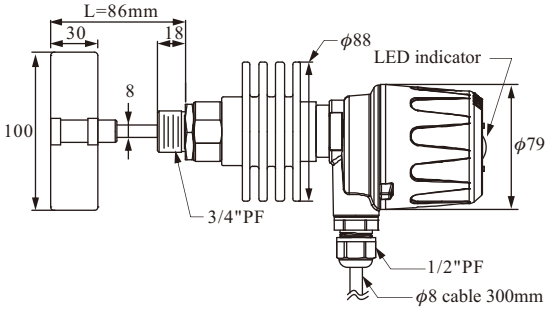
STANDARD
SE3□□0 Series

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



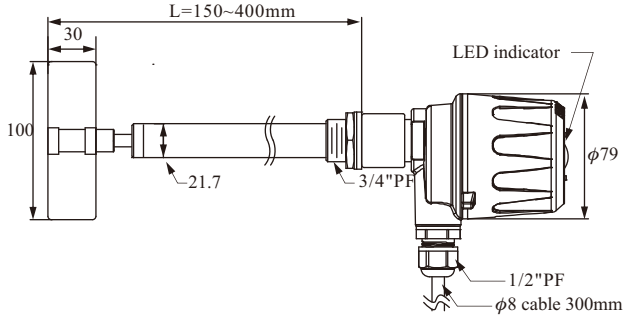
HIGH TEMPERATURE TYPE
SE3□□4 Series

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



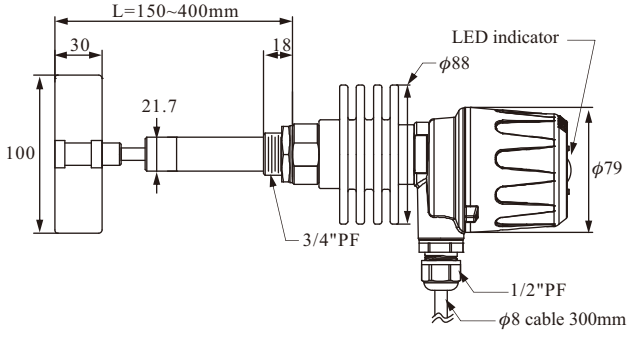
SHAFT PROTECTIVE TUBE TYPE
SE3□□2 Series

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



HIGH TEMPERATURE SHAFT PROTECTIVE TUBE TYPE
SE3□□5 Series

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



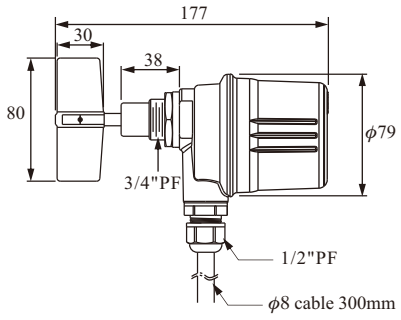
FineTek

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 :** R.P.M.
- **IP rating :** IP65
- **Housing material :** Plastic cover
- **Ambient temperature :** -40℃ ~ 85℃
- **Cable length :** 300mm (available for custom length)
- **Material density :** 0.3

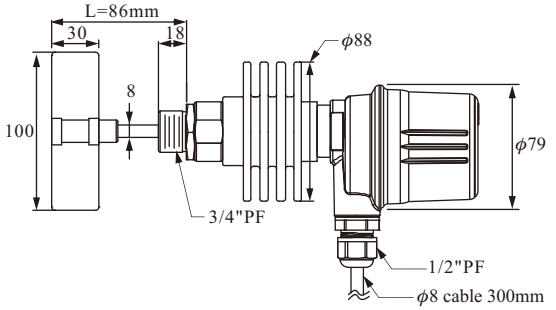
STANDARD
SE3□20 Series

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



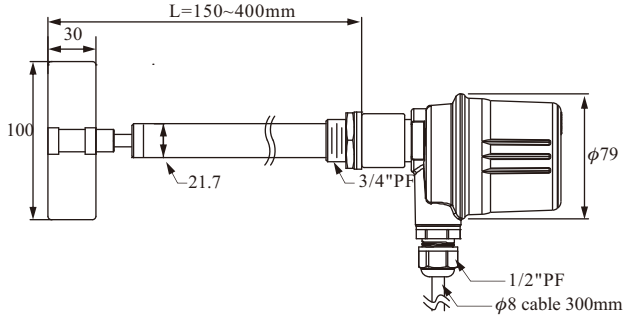
HIGH TEMPERATURE TYPE
SE3□24 Series

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



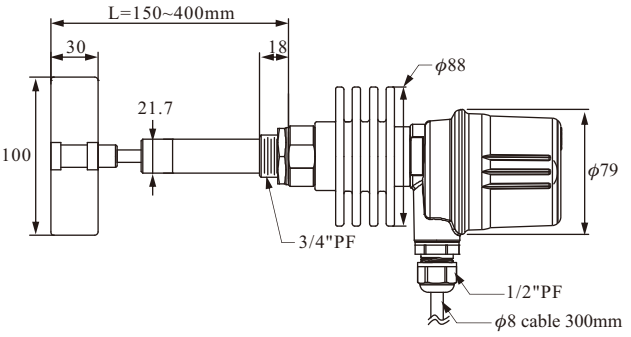
SHAFT PROTECTIVE TUBE TYPE
SE3□22 Series

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



HIGH TEMPERATURE SHAFT PROTECTIVE TUBE TYPE
SE3□25 Series

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

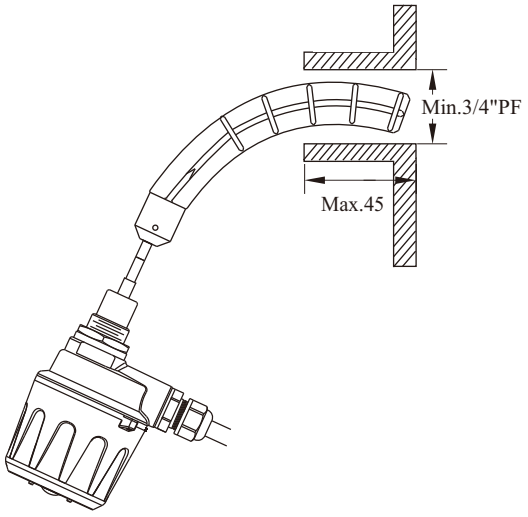


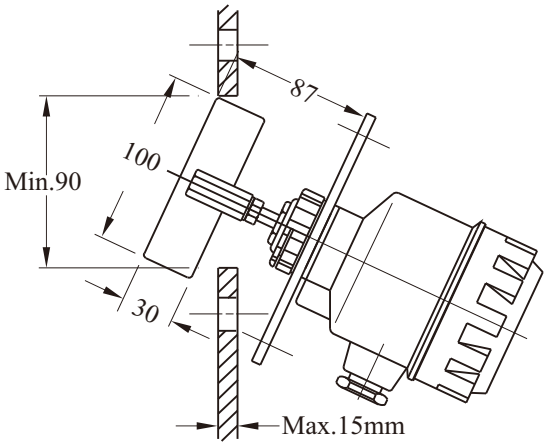
FineTek

MOUNTING EXAMPLES

Regular models such as the SE11should 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.

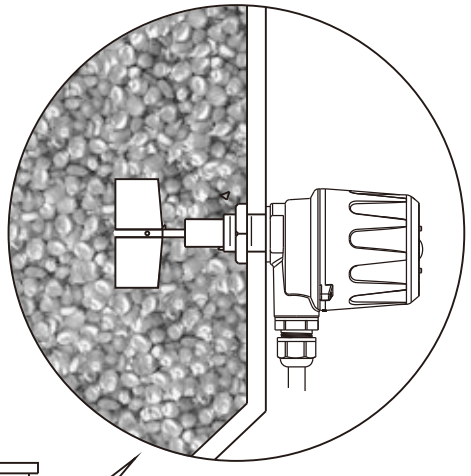
* The SE170 series minimum hole size should be 95mm in diameter.
The scimitar model is directly installed on the tank wall method as shown below.
(Assuming an arc-shaped tank with a 3/4 "connection) and then screwing it tight.

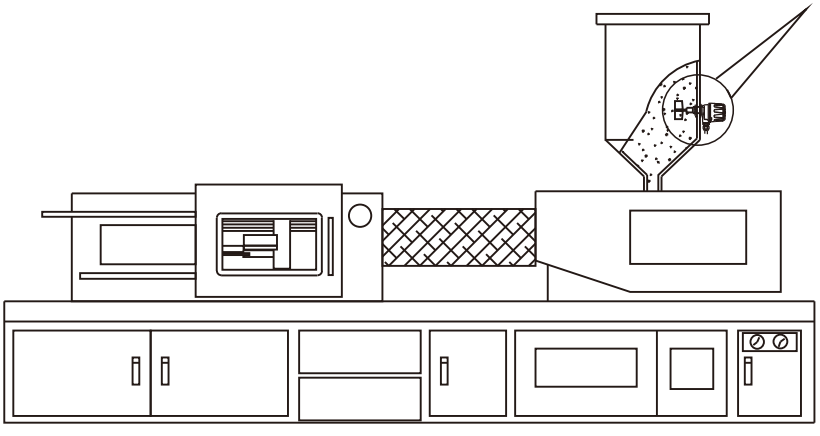




INJECTION MOLDING MACHINES

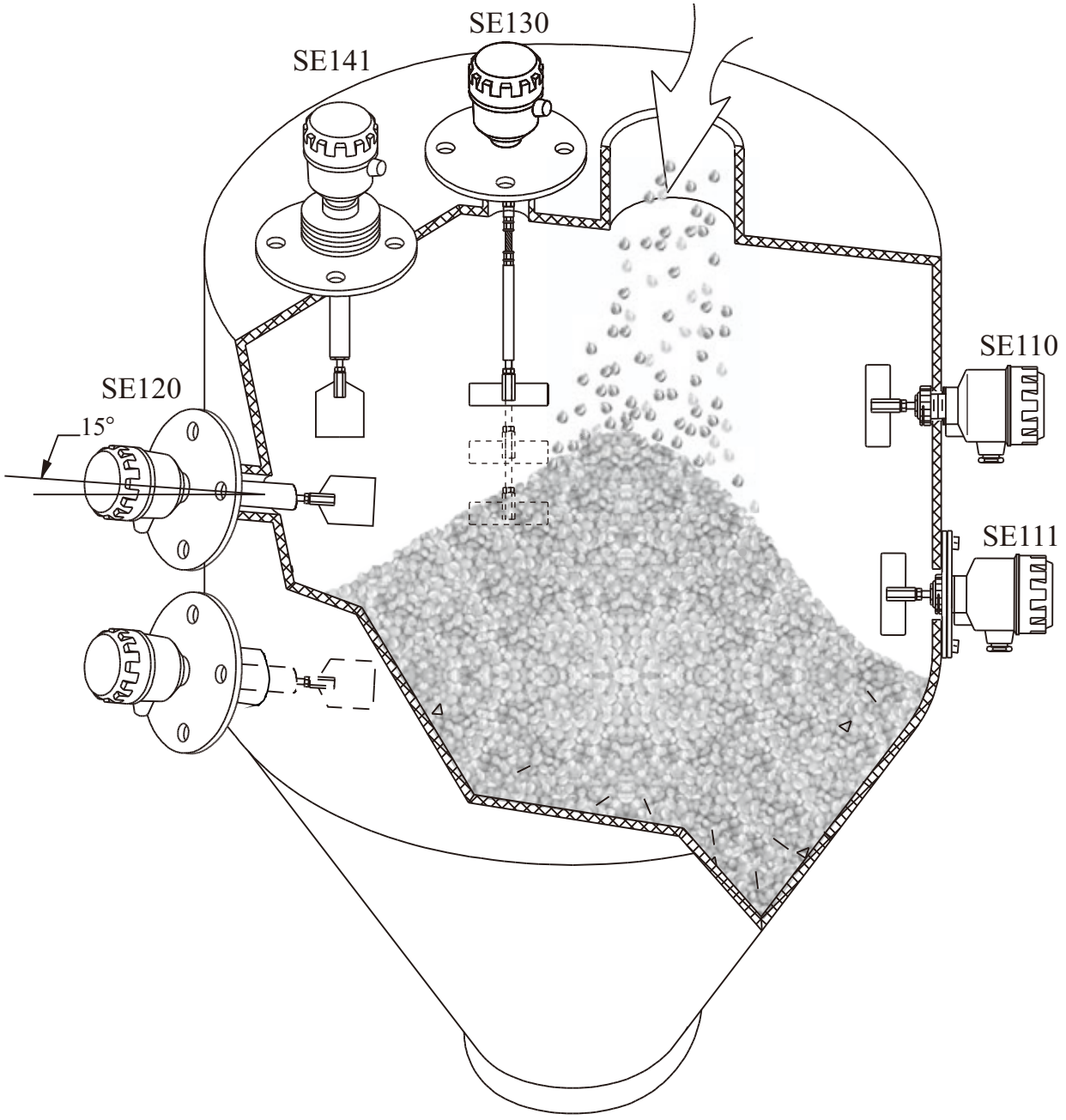
Injection Molding Machine usually require the SE38.
Install the Rotary Paddle through a 20mm diameter hole on the tank/silo.
Remove the paddle from the device by taking out the fastening pin.
Insert the SE38 through the mounting hole and tighten it.
After which, secure the Paddle to the SE38 by locking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





FineTek

EXAMPLES



INSTALLATION NOTICES

1. Side mount the sensor at a downward angle of 15° ~20° to decrease the material inflow impact.
2. For high temperature application (more than 70°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.

HOW TO ORDER

SE □□□ □ □□ □ (□□□□)

MODEL NO.

11□ : Standard model
120 : Shaft protective tube model
130 : Shaft length adjustable model
14□ : Hi-temp model
160 : Cable wire model

VOLTAGE

A : 110Vac B : 220Vac C : 240Vac D : 24Vac
E : 24Vdc 50/60Hz

MOUNTING

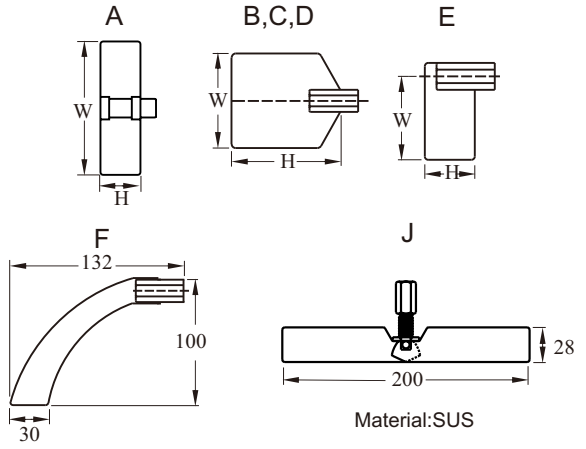
Size for flange or screw	
D: 1"	I : 4"
E: 1-1/2"	J : 5"
F: 2"	K: 6"
G: 2-1/2"	S : Others
H: 3"	3 : 1-1/4"

Specification	
M: 5kg/cm^2	Z : PN40
N : 10kg/cm^2	Q: PT
O : 150 Lbs	R: PF (G)
P : 300 Lbs	T : BSP
W: PN10	U: NPT
X: PN16	S: Others
Y: PN25	

PADDLE SHAPES

SE110~SE170

A : 100x30 (WxH)
B : 65x80 (WxH)
C : 65x120 (WxH)
D : 80x80 (WxH)
E : 50x30 (WxH)
F : Scimitar
J : 200x28 (WxH)
S : others - : None



LENGTH (mm)

0500: below 500mm
1000: 501~1000mm
1500: 1001~1500mm
⋮

✻ Note

1. Check the voltage 24Vac, 110Vac, 220Vac or 240Vac, 50/60 Hz.
2. Check the side or top mounting.
3. Check the material specific gravity (S.G.) value.
4. If blockages are frequent or vibrating motors are installed onto the tank wall, our SA140 capacitance level sensor is more suitable.
5. Check whether the rotary paddle can fit through the flange inlet or from the inside of the tank

HOW TO ORDER

SE3 □□□□□□□(□□□□)

HOUSING TYPE
7: Ex proof type
8: General type

HOUSING COVER
0: Aluminum cover
1: Aluminum cover with LED lamp
2: Plastic cover
※1 and 2 are not available for SE37.

MODEL
0: Standard
2: Shaft protective tube
4: High temperature
5: High temperature shaft protective tube

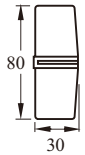
SUPPLY VOLTAGE
A: 110Vac, 50/60Hz
B: 220Vac, 50/60Hz
C: 240Vac, 50/60Hz
D: 24Vac, 50/60Hz
E: 24Vdc

CONNECTION

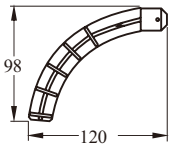
Size for flange or screw	
C: 3/4"	I: 4"
D: 1"	J: 5"
3 : 1-1/4"	K: 6"
E: 1-1/2"	S : Special
F: 2"	
G: 2-1/2"	
H: 3"	

Specification	
M: 5kg/cm^2	Z : PN40
N: 10kg/cm^2	Q: PT
O: 150Lbs	R: PF(G)
P: 300Lbs	T: BSP
W: PN10	U: NPT
X : PN16	S : Special
Y : PN25	

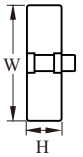
PADDLE SHAPE (mm)
G: Cross paddle
H: Scimitar paddle
I : 100x30 (WxH)
K: Folding paddle
S: Special
-: None

G


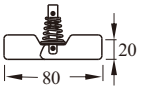
Material: PC

H


Material: PC

I


Material: Stainless steel

K


Material: Stainless steel

CABLE LENGTH (mm)
0500 : below 500mm
1000: 501~1000mm
1500: 1001~1500mm
⋮

※500mm per unit
※Standard length 300mm

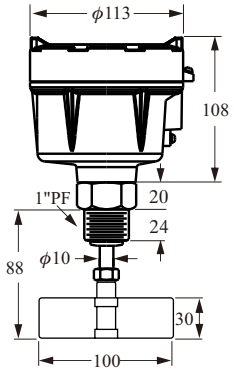
EXPLOSION PROOF MODEL

NEPSI PROOF No.GYJ111214 Ex d IIC T3~T6
PTB PROOF No. 05 ATEX 1029 ⟨Ex⟩II 2G Ex d IIB T6~T3 Gb
⟨Ex⟩II 2D Ex tb IIIC T85°C~T200°C Db IP65

- **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^2 (std.)
- **Housing material :** AL Alloy, ADC-12
- **Conduit :** 1/2" (std.) or 3/4"NPT
- **Material density :** 0.5 g/cm^3

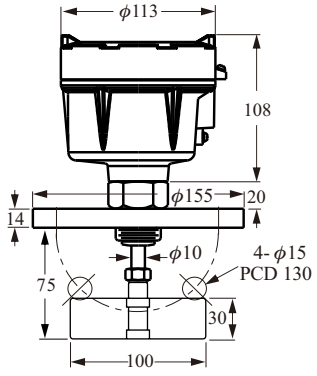
EXPLOSION PROOF CONNECTION MODEL
SE170 series

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



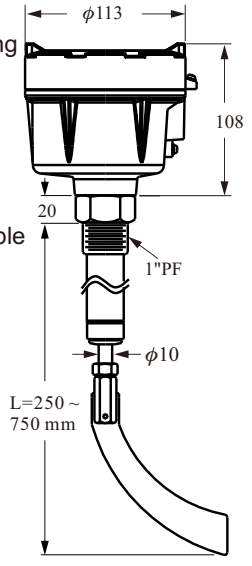
EXPLOSION PROOF FLANGE MODEL
SE171 series

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



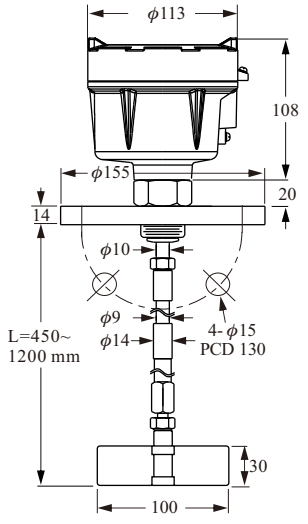
EXPLOSION PROOF SHAFT PROTECTION MODEL
SE172 series

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



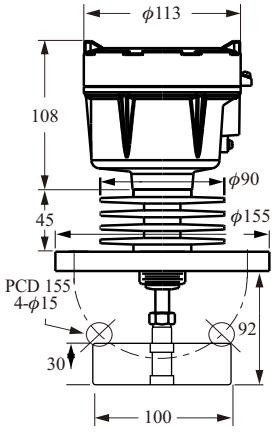
EXPLOSION PROOF ADJUSTABLE SHAFT MODEL
SE173 series

- 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 MODEL
SE174 series

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



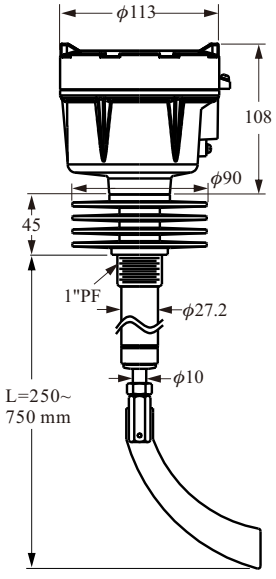
FineTek

EXPLOSION PROOF MODEL

NEPSI PROOF No.GYJ111214 Ex d IIC T3~T6
PTB PROOF No. 05 ATEX 1029 ⟨Ex⟩II 2G Ex d IIB T6~T3 Gb
⟨Ex⟩II 2D Ex tb IIIC T85°C~T200°C Db IP65

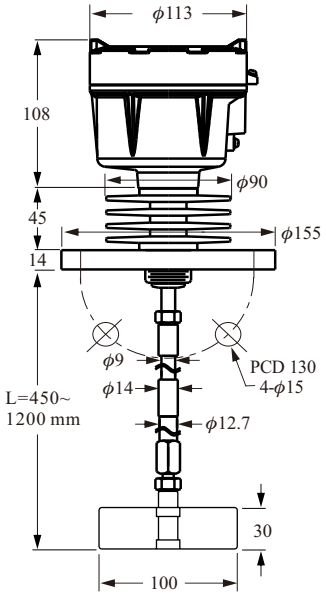
EXPLOSION PROOF HI-TEMP SHAFT PROTECTIVE TUBE MODEL
SE175

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



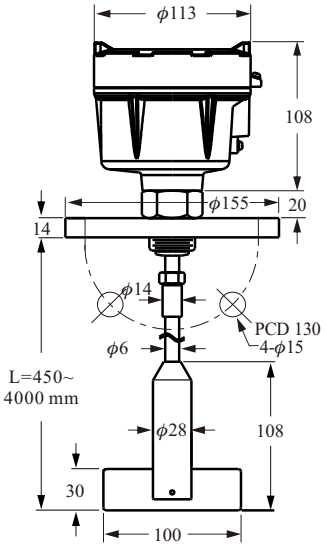
EXPLOSION PROOF HI-TEMP ADJUSTABLE SHAFT MODEL
SE176

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



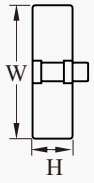
EXPLOSION PROOF CABLE WIRE MODEL
SE177

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



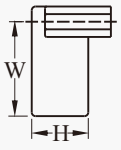
■ Paddle Introduction

A



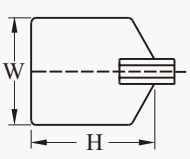
(A) 100x30 (WxH), Min. fixed hole diameter size ϕ90mm.

E



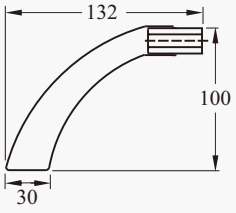
(E) 50x30 (WxH), Suitable for high S.G. raw materials. Use a small size paddle to decrease the impact of material falling directly on paddle.

B,C,D



(B) 65x80 (WxH), Directly mounted into 2" fixed hole.
(C) 65x120 (WxH), Directly mounted into 2" fixed hole.
(D) 80x80 (WxH)

F



(F) Scimiter model paddle, Screw tightly on the 1" diameter fixed hole, It Is easier to mount and dismount.

FineTek

HOW TO ORDER

SE1 7□ □ □□ □ (□□□□)

MODEL NO.

70: Screw model	74: Hi-temp model
71: Flange model	75: Hi-temp shaft protective tube model
72: Shaft protective tube model	76: Hi-temp shaft length adjustable model
73: Shaft length adjustable model	77: Cable wire model

VOLTAGE

A : 110Vac B : 220Vac C : 240Vac D : 24Vac

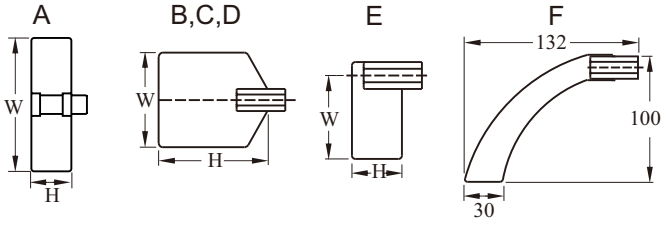
MOUNTING

Size for flange or screw	
D: 1"	I : 4"
E: 1-1/2"	J : 5"
F : 2"	K: 6"
G: 2-1/2"	S : Others
H: 3"	3 : 1-1/4"

Specification	
M: 5kg/cm^2	Z : PN40
N: 10kg/cm^2	Q: PT
O: 150 Lbs	R : PF (G)
P : 300 Lbs	T : BSP
W: PN10	U : NPT
X: PN16	S : Others
Y: PN25	

PADDLE SHAPES

A : 100x30 (WxH)
B : 65x80 (WxH)
C : 65x120 (WxH)
D : 80x80 (WxH)
E : 50x30 (WxH)
F : Scimitar
S : Others



LENGTH (mm)

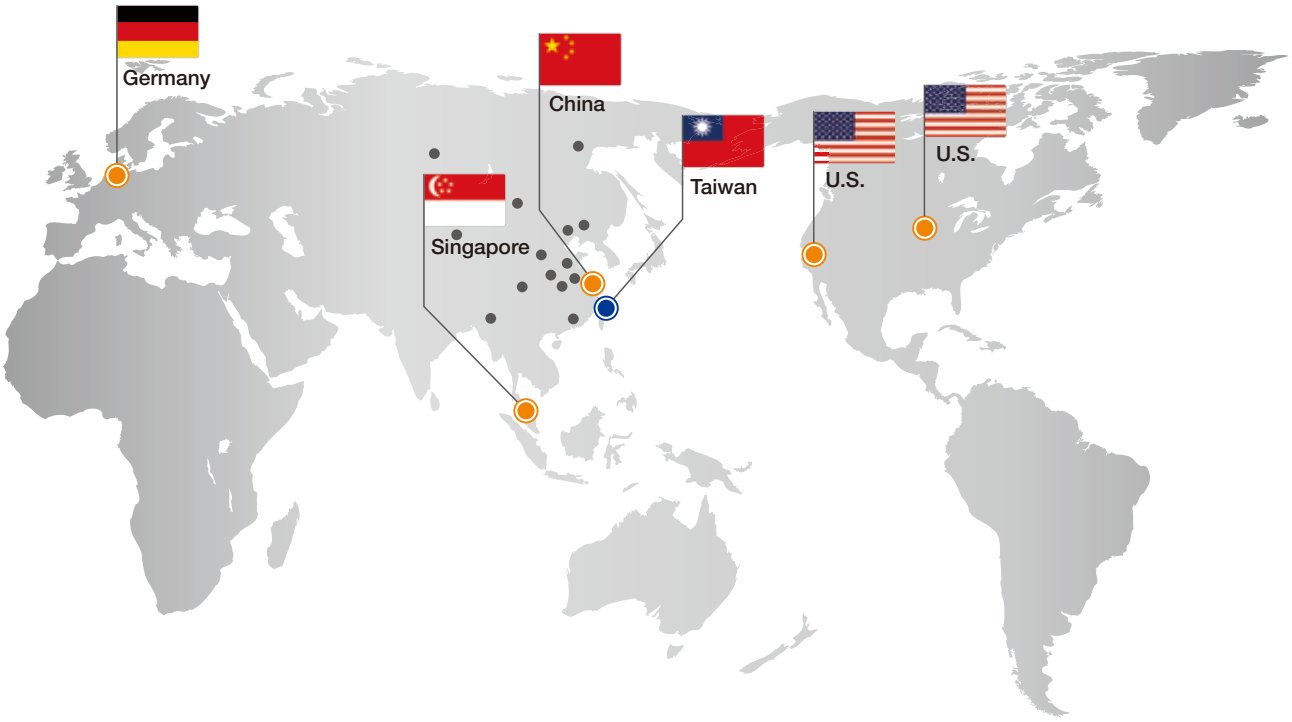
0500: below 500mm
1000: 501~1000mm
1500: 1001~1500mm
⋮

※ 500mm per Unit
※ The total length of item will be allowed a margin of error of 6mm.

✻ Note

1. Check the voltage 24Vac, 110Vac, 220Vac, 240Vac, 50/60 Hz.
2. Check the side or top mounting.
3. Check the material specific gravity (S.G.) value.
4. If blockages are frequent or vibrating motors are installed onto the tank wall, our SA140 capacitance level sensor is more suitable.
5. Check whether the rotary paddle can fit through the flange inlet or from the inside of the tank

Global Network



Asia

Taiwan

FINETEK CO., LTD. - Taipei Head Quarter
No.16, Tzuchiang St., Tucheng Industrial Park
New Taipei City 236, Taiwan
TEL: 886-2-2269-6789
FAX: 886-2-2268-6682
EMAIL: info@fine-tek.com

FINETEK CO., LTD. - I-Lan Factory
TEL: 886-3-990-9669
FAX: 886-3-9909659

FINETEK CO., LTD. - Taichung Brance
TEL: 886-4-2337-0825
FAX: 886-4-2337-0836

FINETEK CO., LTD. - Kaohsiung Branch
TEL: 886-7-333-6968
FAX: 886-7-536-8758

China

FINE AUTOMATION CO., LTD. - Shanghai Factory
No.451 DuHui Rd, MinHang District, Shanghai,
China 201109
TEL: 86-21-6490-7260
FAX: 86-21-6490-7276
EMAIL: info.sh@fine-tek.com

Singapore

FINETEK PTE LTD. - Singapore Office
No. 60 Kaki Bukit Place, #07-06 Eunos
Techpark 2 Lobby B, Singapore 415979
TEL: 65-6452-6340
FAX: 65-6734-1878
EMAIL: info.sg@fine-tek.com

North America

California, U.S.

APLUS FINETEK SENSOR INC. - US Office
355 S. Lemon Ave, Suite D, Walnut,
CA 91789
TEL: 1 909 598 2488
FAX: 1 909 598 3188
EMAIL: info@aplusfine.com

Illinois, U.S.

APLUS FINETEK SENSOR INC.
TEL: 1 815 632-3132
FAX: 1 815 716 8464
EMAIL: info@aplusfine.com

Europe

Germany

FineTeK GmbH - Germany Office
Frankfurter Str. 62, OG D-65428
Ruesselsheim, Germany
TEL: +49-(0)6142-17608-0
FAX: +49-(0)6142-17608-20
EMAIL: info@fine-tek.de

FineTek

Distributor:

08-SE-B0-EP, 01/23/2015