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Rotary Paddle Level Switch

CSA EXPLOSION PROOF TYPE - SEX5



Innovation · Quality · Sharing

PRODUCT INTRODUCTION

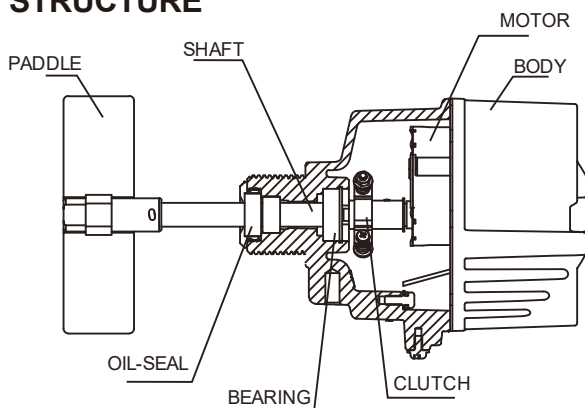
WORKING PRINCIPLE

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 SEX5

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

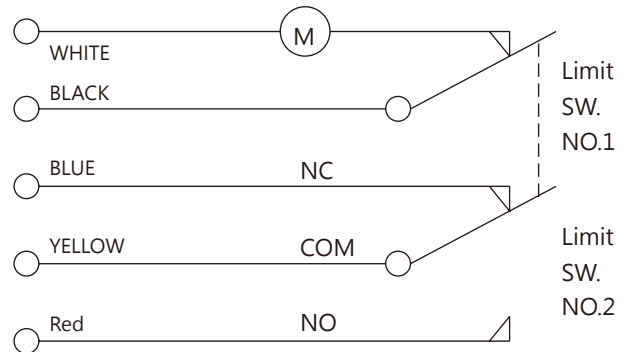
BENEFITS

- 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.

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.

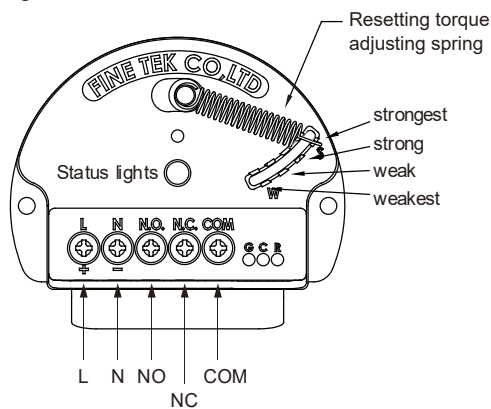


※Do not tamper with the spring as it may cause the Rotary Paddle to malfunction.

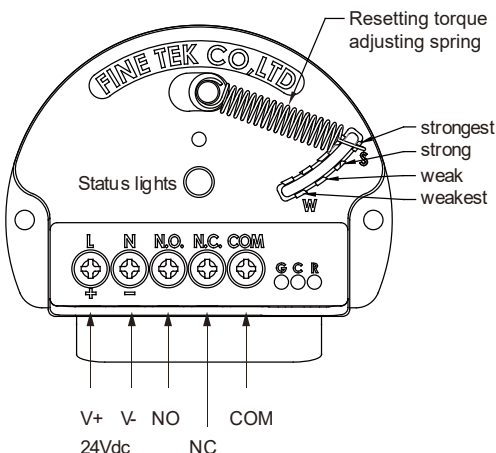
TORQUE ADJUSTING MECHANISM AND WIRING

The torque spring is applied to adjust the shaft output torque. Default settings are "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: SEX5 AC TYPE



Available: SEX5 DC TYPE

EXPLOSION PROOF TYPE - SEX5

ATEX II 1D/2D Ex ta/tb IIIC T85°C or T100°C or T150°C or T200°C
 IECEx Ex ta/tb IIIC T85°C or T100°C or T150°C or T200°C Da/Db
 CSA Ex ta/tb IIIC T85°C ...T200°C Da/Db
 Zone 20 / Zone 21 AEx ta/tb IIIC T85°C ...T200°C Da/Db
 Class II, Division 1, Groups E, F, G, T200°C

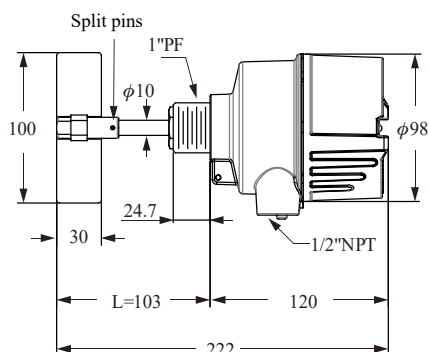
Power source : (A)110Vac,(B)220Vac,(C)240Vac,
 (D)24Vac,50/60Hz,(E)24Vdc
 Power consumptio : 3W
 Contact capacity : SPDT 5A/250Vac
 Rotary speed : 1 R.P.M.
 Insulation test voltage : 2500V

Connection : 1"PF screw (minimum)
 Protection/ material : IP67 / ADC-12
 Conduit : 1/2"NPT/ADC-12
 Material density : 0.5g/cm³ (30Lb/ft³)

SE110

SCREW TYPE

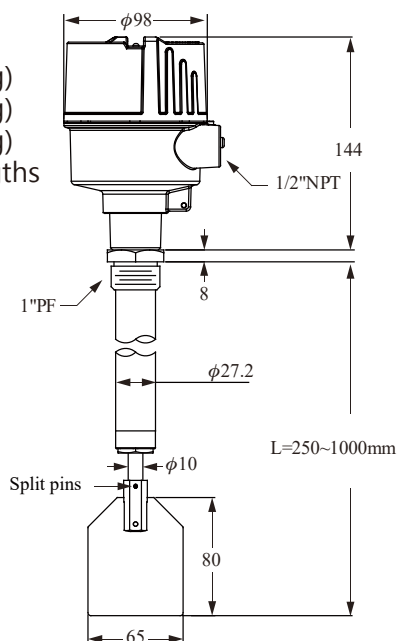
Horizontal mounting
 Operation Temp.: -20°C ~ 85°C
 Weight: 1.2 kg



SE120

SHAFT PROTECTIVE TUBE TYPE

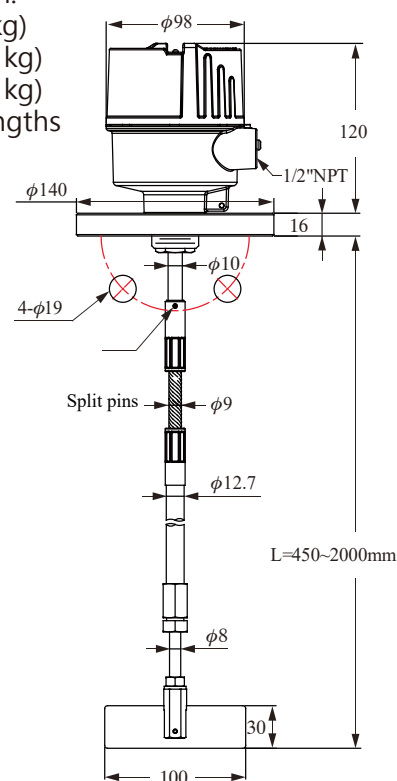
Horizontal / Vertical mounting
 Operation Temp.: -20°C ~ 85°C
 Weight: 1.2 kg
 Standard Length:
 L--250mm (2.2 kg)
 L--500mm (2.5 kg)
 L--750mm (2.8 kg)
 (Customized lengths available)



SE130

SHAFT LENGTH ADJUSTABLE TYPE

Horizontal / Vertical mounting
 Operation Temp.: -20°C ~ 85°C
 Weight: 1.2 kg
 Standard Length:
 L--630mm(2.5 kg)
 L--1000mm(2.8 kg)
 L--1200mm(3.0 kg)
 (Customized lengths available)



EXPLOSION PROOF TYPE - SEX5

ATEX II 1D/2D Ex ta/tb IIIC T85°C or T100°C or T150°C or T200°C
 IECEx Ex ta/tb IIIC T85°C or T100°C or T150°C or T200°C Da/Db
 CSA Ex ta/tb IIIC T85°C ...T200°C Da/Db
 Zone 20 / Zone 21 AEx ta/tb IIIC T85°C ...T200°C Da/Db
 Class II, Division 1, Groups E, F, G, T200°C

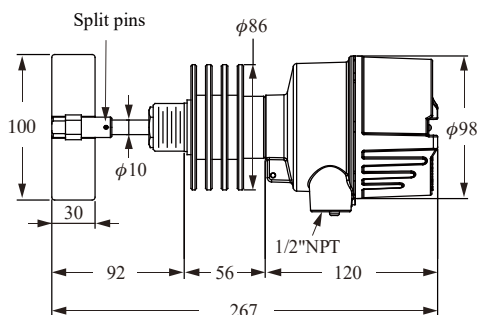
SE140

HI-TEMP TYPE

Horizontal mounting

Operation Temp.: Max.200°C

Weight: 2.1 kg



SE146

HI-TEMP SHAFT

LENGTH ADJUSTABLE TYPE

Vertical mounting

Operation Temp.: Max.200°C

Standard Length:

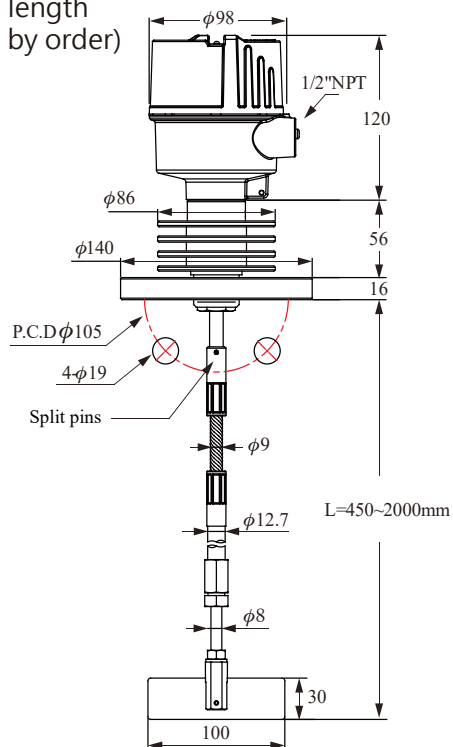
(Option)

L-- 450~630mm (3 kg)

L-- 650~1000mm (3.3 kg)

L-- 750~1200mm (3.5 kg)

(Special length is made by order)



SE141

HI-TEMP TYPE

PROTECTIVE TUBE TYPE

Horizontal / Vertical mounting

Operation Temp. : Max.200°C

Standard Length:

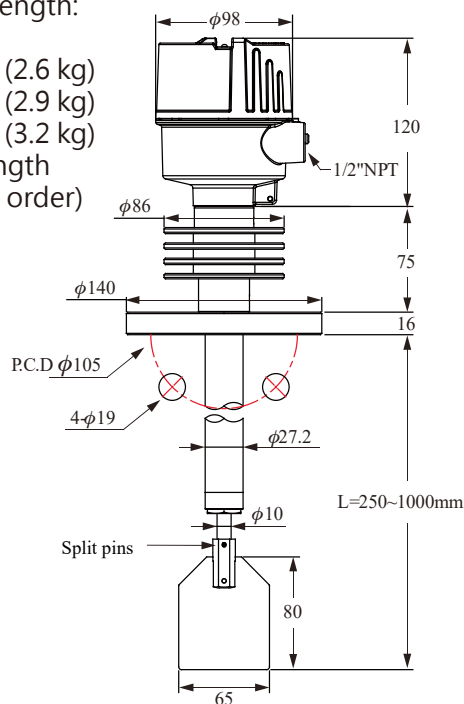
(Option)

L--250mm (2.6 kg)

L--500mm (2.9 kg)

L--750mm (3.2 kg)

(Special length is made by order)



SE160

CABLE WIRE TYPE

Vertical mounting

Operation Temp.: -20°C ~ 85°C

Standard Length:

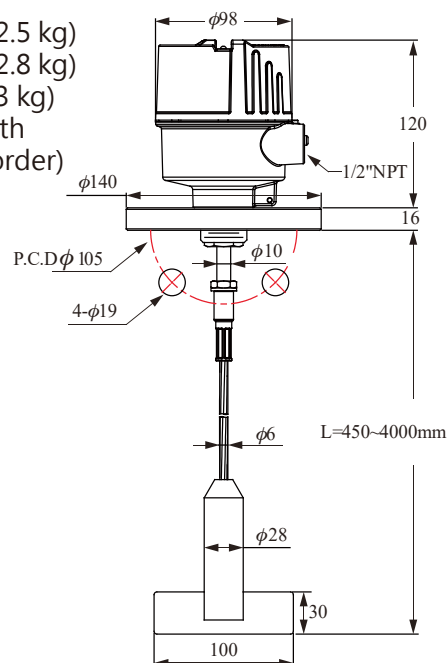
(Option)

L-- 450mm (2.5 kg)

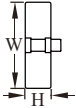
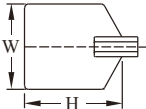
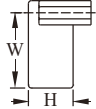
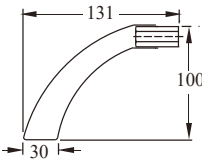
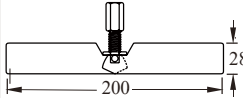
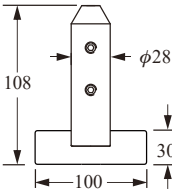
L-- 650mm (2.8 kg)

L-- 750mm (3 kg)

(Special length is made by order)



NEW / OLD PADDLE MODEL COMPARISON TABLE

New	Figure		Dimension(WxH)	Old
B	Rectangular shaped type		100x30	A
C	Shovel shaped type		65x80	B
D			65x120	C
E			80x80	D
F	Rectangular type, one sided		50x30	E
G	Scimitar shaped type		100x132	F
H	Folding type		200x28	J
K	Weights type		100x108	X

ORDER INFORMATION

		05	06	07	08	SEX5		10	11	12	13	14	15	16	17	18	19	20	21	22
						-A														
⑤⑥ Model																				
00: Standard																				
02: Hi-temperature																				
⑦⑧ Certification																				
1D: ATEX-Dust																				
2D: IECEx-Dust																				
6D: CSA-Dust																				
⑩ Construction																				
A: General type																				
B: Shaft protective tube type																				
C: Shaft length adjustable type																				
D: Cable wire type																				
⑪ Power supply																				
A: AC110V																				
B: AC220V																				
C: AC240V																				
D: AC24V																				
E: DC24V																				
Connection																				
⑫⑬																				
Flange item																				
AK: JIS-FF																				
AS: DIN-FF																				
AJ: JIS-RF																				
AM: JIS-WNRF																				
AL: JIS:SLIP																				
AN: ANSI-RF																				
AO: ANSI-FF																				
AP: ANSI-WNRF																				
AQ: ANSI-SLIP																				
AR: DIN-RF																				
AT: DIN-WNRF																				
AU: DIN-SLIP Thread item																				
AV: GB-RF																				
AW: GB-FF																				
BC: Standard thin flange																				
(Suitable for 2-1/2"dimension)																				
⑭⑮																				
Thread item																				
AA: JIS																				
AB: ISO																				
AC: ANSI/AST																				
A7: 3/4"																				
A8: 1"																				
A9: 1-1/4"																				
B1: 1-1/2"																				
B2: 2"																				
B3: 2-1/4"																				
B4: 2-1/2"																				
B5: 3"																				
B6: 3-1/2"																				
B7: 4"																				
B8: 5"																				
B9: 6"																				
C1: 8"																				
C2: 10"																				
J9: M27																				
K3: M30																				
K5: M32																				
K6: M33																				
L9: M45																				
SS: Special specification																				
⑯⑰																				
01: PT male																				
03: PF male																				
05: BSP male																				
07: NPT male																				
09: NPTR male																				
11: NRTF male																				
15: UNF male																				
23: UNC male																				
39: 5 kg/cm ² x4T(Thin flange)																				
78: M*pitch1.0																				
80: M*pitch1.25																				
82: M*pitch1.5																				
84: M*pitch2																				
86: M*pitch2.5																				
88: M*pitch3																				
91: BSPT male																				
SS: Special specification																				
⑱ Paddle model																				
A: None																				
B: 100x30(WxH)																				
C: 65x80(WxH)																				
D: 65x120(WxH)																				
E: 80x80(WxH)																				
F: 50x30(WxH)																				
G: Scimitar type 100x131(WxH)																				
H: Folding type 200x28(WxH)																				
K: Cable wire type only100x108(WxH)																				
S: Special blade																				
⑲⑳㉑㉒ Length																				
Code	Length range																			
0001~4000	0001~4000mm																			



Certificate of Compliance

Certificate: 80122850

Master Contract: 272705

Project: 80122850

Date Issued: September 27, 2024

Issued To: FineTek Co., Ltd.
No. 16, Ziqiang Street
Tucheng District, New Taipei City, 23678
Taiwan

Attention: Mult Wang

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.

Issued by: Sean Lee



PRODUCTS

CLASS - C225882 - PROCESS CONTROL EQUIPMENT For Hazardous Locations - Certified to US Standards

CLASS - C225802 - PROCESS CONTROL EQUIPMENT For Hazardous Locations

Ex ta/tb IIIC T85°C ...T200°C Da/Db (For Canada)

Zone 20 / Zone 21 AEx ta/tb IIIC 85°C ...T200°C Da/Db (For US)

Class II, Division 1, Groups E, F, G, T200°C

T-code	Ambient Temperature	Process Temperature
High-temperature type SEX502*****		
T200°C	-40°C to +40°C	-40°C to +200°C
T150°C	-40°C to +40°C	-40°C to +150°C
T100°C	-40°C to +40°C	-40°C to +100°C



Certificate: 80122850

Project: 80122850

Master Contract: 272705

Date Issued: September 27, 2024

Normal-temperature type SEX500*****		
T85°C	-40°C to +40°C	-40°C to +85°C

The rotary paddle level switch is engineered to identify the presence of solid or granular substances within various tanks, silos, and vessels. Typically mounted through the side of a container at either the top, middle, or bottom, this device functions by rotating a paddle at a speed of 1 RPM using a synchronous motor under normal conditions (absence of material). When the paddle encounters resistance from material, causing the motor to stall, the clutch mechanism retracts the bearing. This action triggers a micro switch, which then disconnects power to the motor, thereby extending its service life.

The micro switch is responsible for generating output signals that can activate auditory and visual alerts or control equipment such as conveyor systems, elevators, and dispensers. Upon the paddle's disengagement from the material, a spring mechanism resets the bearing, allowing the device to resume operation.

Input Voltage: (A)110Vac, 50/60Hz (B)220Vac,50/60Hz (C)240Vac, 50/60Hz (D)24Vac,50/60Hz (E)24Vdc

Power Consumption: 3W

Contact Capacity: SPDT 5A/250Vac

The model designation of the SEX5 series is as follows:



Certificate: 80122850
Project: 80122850

Master Contract: 272705
Date Issued: September 27, 2024

SEX5 ORDER INFORMATION

	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
SEX5																			
Model																			
00:Standard 02:Hi-temperature																			
Certification																			
00: None 1D: ATEX-Dust 2D: IECEx-Dust 6D: CSA -Dust																			
Housing																			
A:Aluminum cover																			
Construction																			
A: General type B: Shafe protective tube type C: Shafe length adjustable type D: Cable wire type																			
Power supply																			
A: AC110V D: AC24V B: AC220V E: DC24V C: AC240V																			
International standard																			
AJ:JIS-RF AR:DIN-RF AV:GB-RF CD:JB-RF AK:JIS-FF AS:DIN-FF AW:GB-FF SS:special AM:JIS-WNRF AT:DIN-WNRF BC:Standard specification AL:JIS-SLIP AU:DIN-SLIP Thread item thin flange specification AN:ANSI-RF AA:JIS CA:HG-FF 00:None AO:ANSI-FF AB:ISO CB:HG-RF 02:Round AP:ANSI-WNRF AC:ANSI/AST 03:Square AQ:ANSI-SLIP																			
Standard sizes																			
00:None B6:3-1/2" J9:M27 A7:3/4" B7:4" K3:M30 A8:1" B8:5" K5:M32 A9:1-1/4" B9:6" K6:M33 B1:1-1/2" C1:8" L9:M45 B2:2" C2:10" SS:special B3:2-1/4" specification B4:2-1/2" B5:3"																			
Connection type																			
01:PT male 39:5K*4T(thin flange) 84:M*pitch2 03:PF male 78:M*pitch1.0 86:M*pitch2.5 05:BSP male 80:M*pitch1.25 88:M*pitch3 07:NPT male 82:M*pitch1.5 91:External Teeth_BSPT 09:NPTTR male 84:M*pitch2 SS:special specification 11:NPTF male 00:None 15:UNF male 23:UNC male																			
Blade																			
A:None F:50 x 30 (W x H) B:100x30(WxH) G:Scimitar type132x100(WxH) C:65x80(WxH) H:Folding type 200x28(WxH) D:50x30(WxH) K:100x108(WxH)(Cable wire type only) E:80 x 80 (W x H) S:special blade																			
Length																			
0001~A000:1~10000mm																			



Certificate: 80122850
Project: 80122850

Master Contract: 272705
Date Issued: September 27, 2024

APPLICABLE REQUIREMENTS

CAN/CSA C22.2 No.14-18	Industrial control equipment
UL 508 <i>Eighteenth Edition</i>	Industrial control equipment
CAN/CSA C22.2 No. 60079-0:19	Explosive atmospheres – Part 0: Equipment – General requirements
CAN/CSA C22.2 No. 60079-31:15	Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure "t"
FM 3600 <i>January 2022</i>	Examination Standard for Electrical Equipment for Use in Hazardous (Classified) Locations – General Requirements
FM 3616 <i>January 2022</i>	Examination Standard for Dust-Ignitionproof Electrical Equipment – General Requirements

Notes:

Products certified under Class(es) C225802, C225882 have been certified under CSA's ISO/IEC 17065 accreditation with the Standards Council of Canada (SCC). www.scc.ca





Supplement to Certificate of Compliance

Certificate: 80122850

Master Contract: 272705

*The products listed, including the latest revision described below,
are eligible to be marked in accordance with the referenced Certificate.*

Product Certification History

Project	Date	Description
80122850	2024-09-27	Original cCSAus certification of Class II, Division 1 dust ignitionproof or Zone 20/21 dust protection by enclosure “ta/tb” protected Rotary Paddle Level Switch model SE1X Series. This project is partially based on IECEx certification conducted by CSA Group under a separate project, and based on the evaluation of LOA quote line QL-3995131. Markings: Class II, Division 1 Groups EFG T3; Ex ta/tb IIIC T200 °C ...T85 °C ; Zone 20/21 AEx ta/tb IIIC T200 °C ...T85 °C ; -20 °C to +70 °C IP 65

MOUNTING EXAMPLES

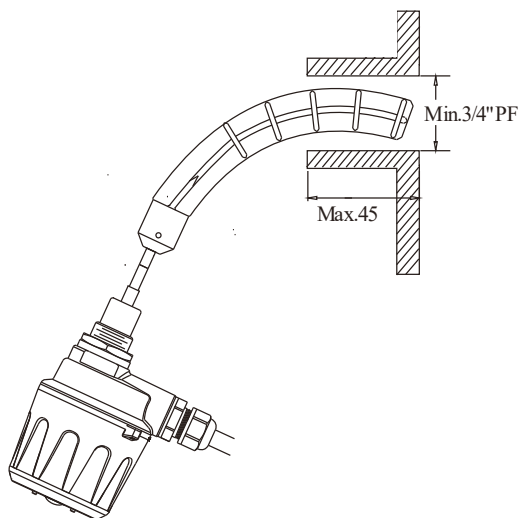
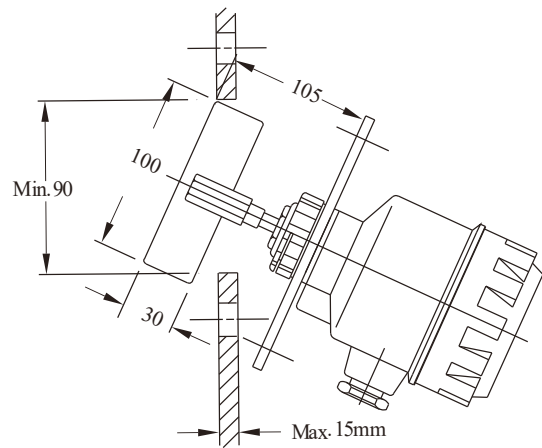
Regular models such as the SE11 should be installed directly on the tank side.

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

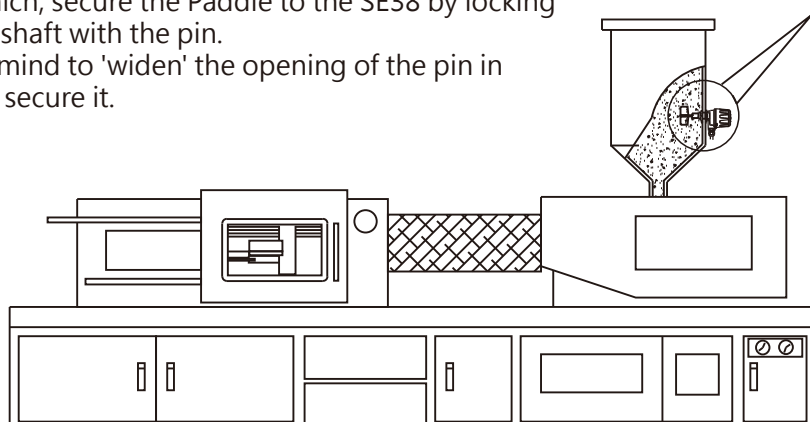
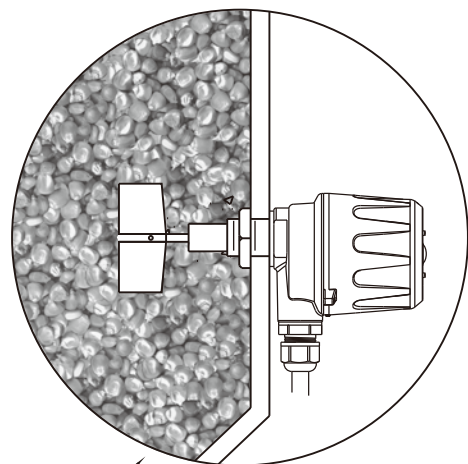
Injection Molding Machine usually require the SE38. Install the Rotary Paddle through a 20mm diameter hole on the tank/silo.

Remove the paddle from the device by taking out the fastening pin.

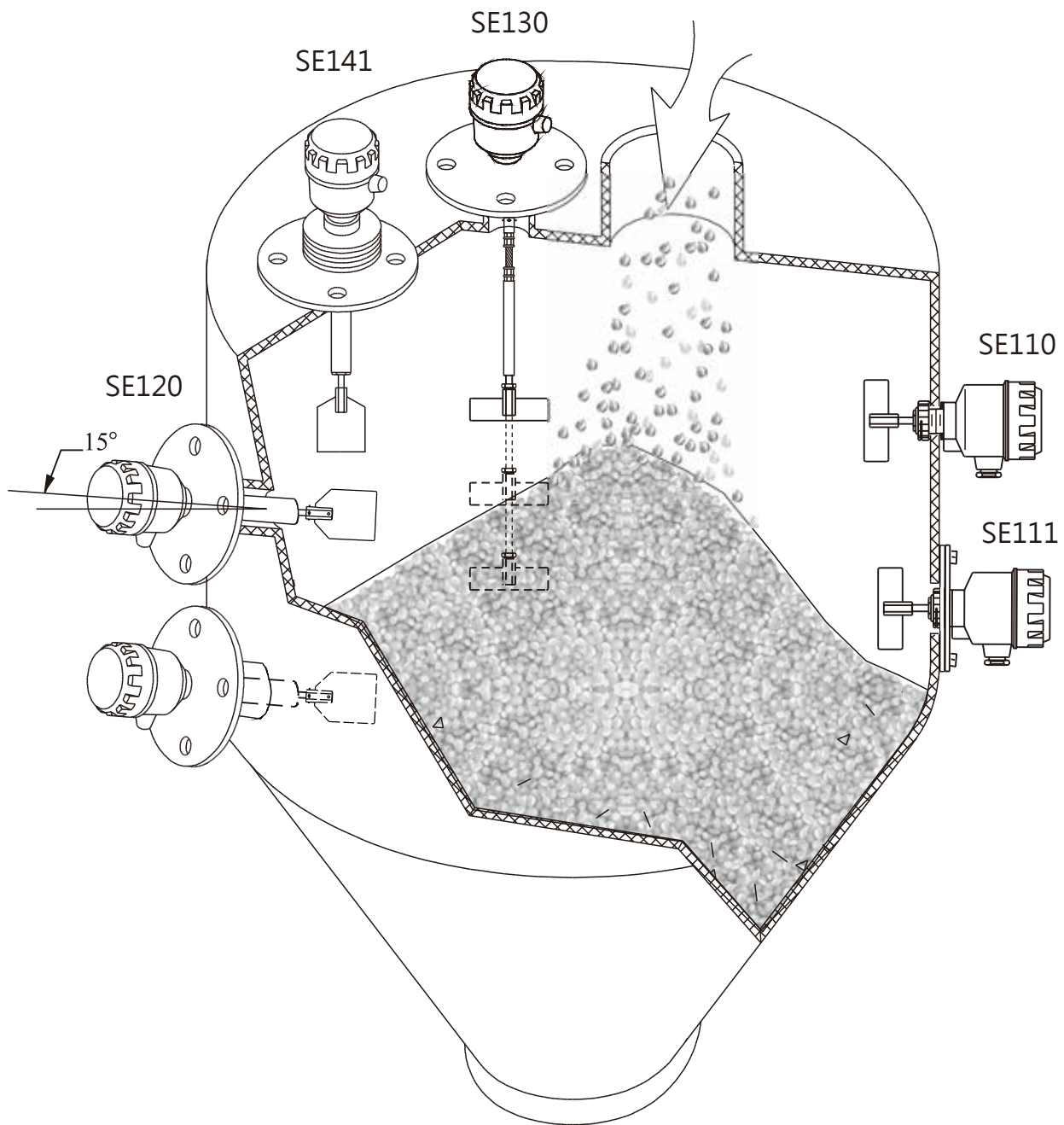
Insert the SE38 through the mounting hole and tighten it.

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 NOTICESEXAMPLES

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 SE149 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.

Global Network



■ Head Quarter

● 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



Distributor:

BESTOBELL
AQUATRONIX
SINCE/DEPUIS 1953

Head Office
 2880 Argentinia Road, Unit 3
 Mississauga, ON L5N 7X8
 salesdesk@bestobell.com
 1-800-668-3979
 www.bestobell.com

Montréal Office
 970 Montée de Liesse, #204
 St.Laurent, QC H4T 1W7
 ventes@bestobell.com
 1-877-331-1225

Atlantic Office
 166 North Side Road
 Riverport, NS B0J 2W0
 dmossman@bestobell.com
 902-529-0355

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