

# **KVK/KVA/KVS/KVF** **SERIES** VIBRATION TYPE LEVEL SWITCH



**RELIABLY DETECT ANY MATERIALS WHOSE SPECIFIC  
CONDUCTIVITY OR ELECTRICAL PROPERTIES MAY BE VARIED!!**



## VIBRATION TYPE LEVEL SWITCH

Its capability of contamination resistance has remarkably been upgraded in such a way that, because vibrating forks are now replaced with a straight rod, the surface area is changed to smaller. This model is so unique that it may detect the low-density powders over the specific gravity of 0.03.

### ■ FEATURES

- It can detect the substance having the physical variations of such as dielectric constant and moisture percentage.
- It consists of a single detection probe and is uniformly structured of stainless steel, which provide the following features; Low Contamination & Withstand High Pressure.
- It is so highly sensitive that it may detect the substance having over the specific gravity of 0.03.

### ■ PRINCIPLE OF OPERATION

When a substance touches on the rod vibrating at an inherent frequency due to vibration device, the amplitude of the rod is reduced, which is electrically detected to be relay-output.

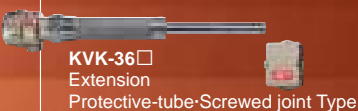
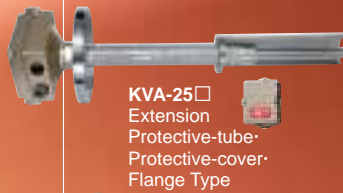
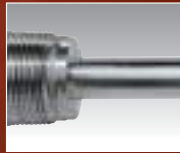
Model **KVK**

High Sensitivity Type



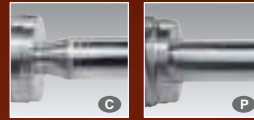
Model **KVA**

Withstand Load Type

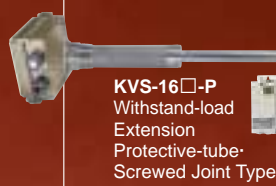


Model **KVS**

High Sensitivity Withstand Load



Intrinsic Safety  
i2G4



Model **KVF**

Flat Type



■ APPLICATIONS

Fine Powder/Granules,  
Submerged Solids, Powdered  
Coffee, Talc, Carbon, Foam  
Polystyrene, Perlite, Flour,  
Powdered Milk, Pharmaceutical  
Powder, Toner, Colorant,  
Pulverized Film Powder, etc.

## STANDARD SPECIFICATION

- Power Source : 105/210VAC ±10% 50/60Hz
- Sensitivity : over 0.03 Specific Gravity
- Frequency : about 165Hz
- Output contact : SPDT 250VAC 10A
- 30VDC 10A(Resistance load)
- Delay timer : about 10sec max. variable
- AMP temperature : -20~+60°C(No condensation/ no freezing)
- Detector : -20~+80°C(No condensation/ temperature no freezing
- 20~+150°C(Separate type)
- Detector pressure : 1MPa (10kgf/cm<sup>2</sup>)
- Detector material : 304SS
- Mounting : R1 · 1/2 or flange over 50A

\*DC Power Specification (Option)  
[24VDC±1V, Ripple(p-p) below 1%, negative earth]



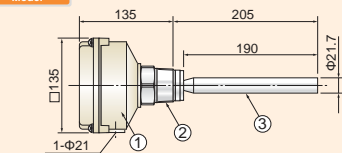
# Model KVK

- KVK is a High Sensitivity Type detecting low-density powders (over 0.03 Specific Gravity)
- In the pursuit of turning-fork vibration accuracy, it becomes contamination-resistant.

## HIGHLY SENSITIVE TO DETECT POWDERS OVER 0.03 SPECIFIC GRAVITY



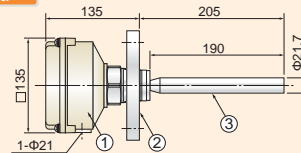
### Integrated Model KVK-111 Screwed joint Type



#### KVK Standard

No.	Part	Material
1	Case	ADC
2	Screw	304SS
3	Rod	304SS

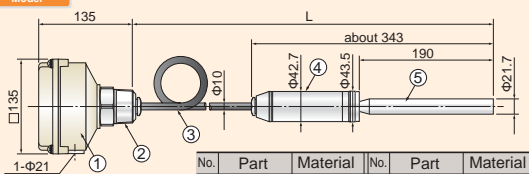
### Integrated Model KVK-121 Flange Type



#### KVK Standard

No.	Part	Material
1	Case	ADC
2	Flange	304SS
3	Rod	304SS

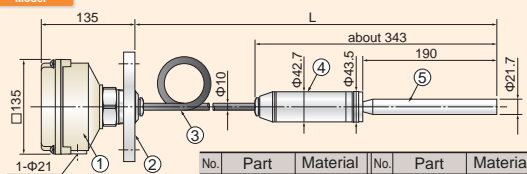
### Integrated Model KVK-17 Flexible-cable, Screwed joint Type



Vertical mounting for Upper - limit detection  
"L" is 6000mm long(max).

No.	Part	Material	No.	Part	Material
1	Case	ADC	4	Prot-tube	304SS
2	Screw	304SS	5	Rod	304SS
3	Cable	Polyurethane			

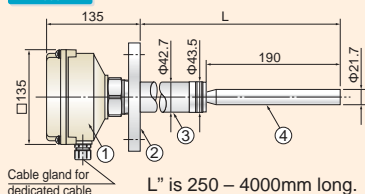
### Integrated Model KVK-18 Flexible-cable, Flange Type



Vertical mounting for Upper - limit detection  
"L" is 6000mm long(max).

No.	Part	Material	No.	Part	Material
1	Case	ADC	4	Prot-tube	304SS
2	Flange	304SS	5	Rod	304SS
3	Cable	Polyurethane			

### Separate Model KVK-23 Extension Protective-tube · Flange Type



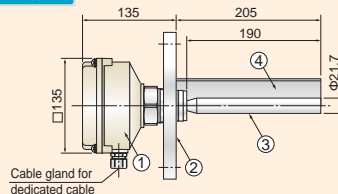
Cable gland for dedicated cable

"L" is 250 - 4000mm long.

Accommodate any length

No.	Part	Material
1	Case	ADC
2	Flange	304SS
3	Protective-tube	304SS
4	Rod	304SS

### Separate Model KVK-241 Std Probe · Protective Cover, Flange Type

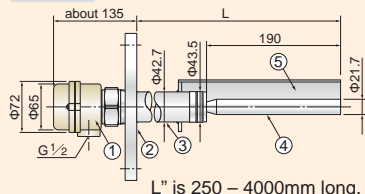


Cable gland for dedicated cable

Can protect the vibrating rod and prevent damage.

No.	Part	Material
1	Case	ADC
2	Flange	304SS
3	Rod	304SS
4	Protective cover	304SS

### Compact & Separate Model KVK-35 Extension Protective-tube · Protective cover, Flange Type

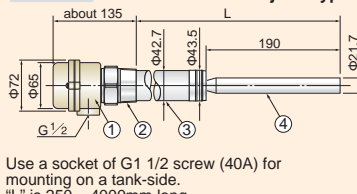


"L" is 250 - 4000mm long.

Can protect the vibrating rod and prevent damage.

No.	Part	Material
1	Case	ADC
2	Flange	304SS
3	Protective-tube	304SS
4	Rod	304SS
5	Protective cover	304SS

### Compact & Separate Model KVK-36 Extension Protective-tube · Screwed joint Type



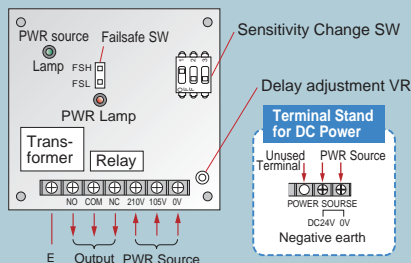
Use a socket of G1 1/2 screw (40A) for mounting on a tank-side.  
"L" is 250 - 4000mm long.

Accommodate any length

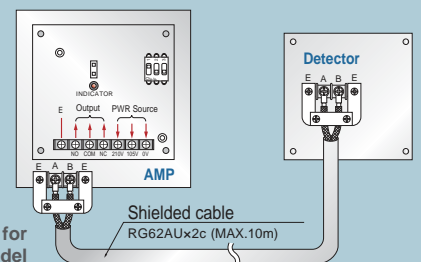
No.	Part	Material
1	Case	ADC
2	Screw	304SS
3	Protective-tube	304SS
4	Rod	304SS



#### Wiring for Integrated Model



#### Wiring for Separate Model





# Model KVA

- Withstand load Type that can withstand the 500N load by powders
- It can come up with the stable vibration of turning fork without changing the outer diameter of the vibrating rod.
- It can detect powders over 0.1 in the specific gravity.

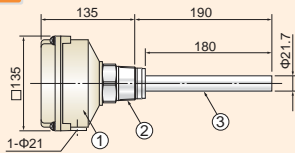
**WITHSTAND LOAD TYPE THAT CAN WITHSTAND THE LOAD UP TO 500N BY POWDERS**

## STANDARD SPECIFICATION

- Power Source : 105/210VAC  $\pm 10\%$  50/60Hz
- Sensitivity : over 0.1 Specific Gravity
- Frequency : about 280Hz
- Output contact : SPDT 250VAC 10A 30VDC 10A(Resistance load)
- Delay timer : about 10sec max. variable
- AMP temperature :  $-20 \rightarrow +60^\circ\text{C}$  (No condensation/ no freezing)
- Detector :  $-20 \rightarrow +80^\circ\text{C}$  (No condensation/ temperature no freezing)
- $-20 \rightarrow +150^\circ\text{C}$  (Separate type)
- Detector pressure : 1MPa (10kgf/cm<sup>2</sup>)
- Detector material : 304SS
- Mounting : R1 · 1/2 or flange over 50A
- Withstand load : 500N

\*DC Power Specification (Option)  
[24VDC $\pm 1\%$ , Ripple (p-p) below 1%, negative earth ]

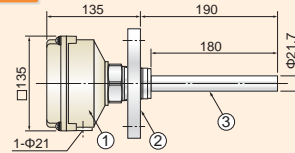
### Integrated Model KVA-111 Screwed joint Type



#### KVK Standard

No.	Part	Material
1	Case	ADC
2	Screw	304SS
3	Rod	304SS

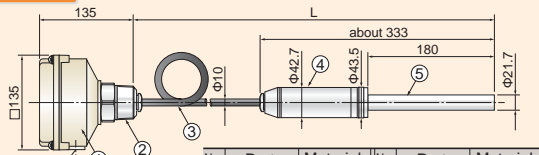
### Integrated Model KVA-121 Flange Type



#### KVK Standard

No.	Part	Material
	Case	ADC
	Flange	304SS
	Rod	304SS

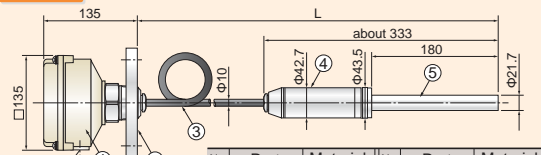
### Integrated Model KVA-17 Flexible-cable, Screwed joint Type



Vertical mounting for Upper - limit detection  
"L" is 6000mm long(max).

No.	Part	Material	No.	Part	Material
1	Case	ADC	4	Prot-tube	304SS
2	Screw	304SS	5	Rod	304SS
3	Cable	Polyurethane			

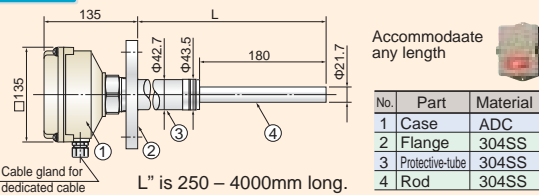
### Integrated Model KVA-18 Flexible-cable, Flange Type



Vertical mounting for Upper - limit detection  
"L" is 6000mm long(max).

No.	Part	Material	No.	Part	Material
	Case	ADC	4	Prot-tube	304SS
	Flange	304SS	5	Rod	304SS
	Cable	Polyurethane			

### Separate Model KVA-23 Extension Protective-tube · Flange Type



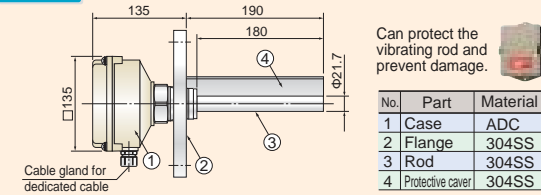
Accommodate any length

Cable gland for dedicated cable

"L" is 250 – 4000mm long.

No.	Part	Material
1	Case	ADC
2	Flange	304SS
3	Protective-tube	304SS
4	Rod	304SS

### Separate Model KVA-241 Std Probe · Protective Cover, Flange Type

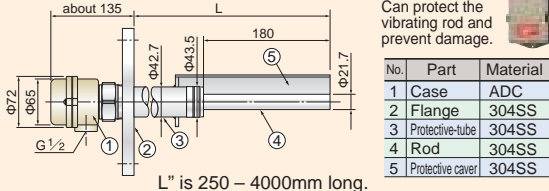


Can protect the vibrating rod and prevent damage.

Cable gland for dedicated cable

No.	Part	Material
1	Case	ADC
2	Flange	304SS
3	Rod	304SS
4	Protective cover	304SS

### Compact & Separate Model KVA-35 Extension Protective-tube · Protective cover, Flange Type

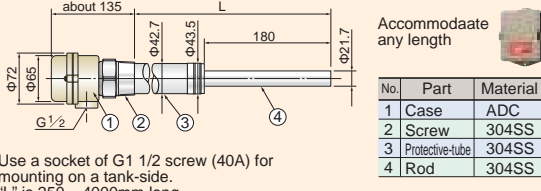


Can protect the vibrating rod and prevent damage.

"L" is 250 – 4000mm long.

No.	Part	Material
1	Case	ADC
2	Flange	304SS
3	Protective-tube	304SS
4	Rod	304SS
5	Protective cover	304SS

### Compact & Separate Model KVA-36 Extension Protective-tube · Screwed joint Type

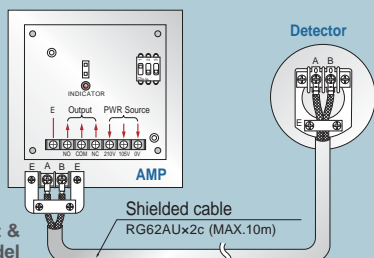


Accommodate any length

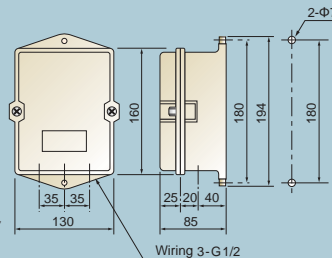
Use a socket of G1 1/2 screw (40A) for mounting on a tank-side.  
"L" is 250 – 4000mm long.

No.	Part	Material
1	Case	ADC
2	Screw	304SS
3	Protective-tube	304SS
4	Rod	304SS

Wiring for Compact & Separate Model



Separate box for Outdoor use



### INTRINSIC SAFETY EXPLOSION-PROOF STRUCTURE

●Both types of High Sensitivity(Ctype) and Withstand Load (Ptype)are available.

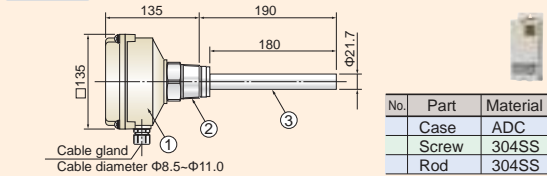
Intrinsic Safety Explosion Proof Structure  
**i2G4**  
Type Certification  
No.T36593

## Model **KVS**

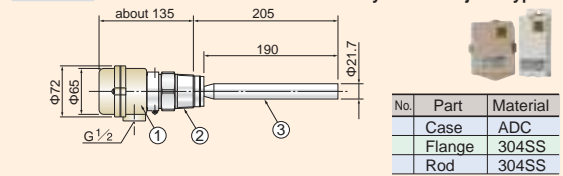
### STANDARD SPECIFICATION

- Power Source : 105/210VAC ±10% 50/60Hz
- Sensitivity : Specific Gravity over 0.03 (C Type) over 0.1 (P Type)
- Frequency : about 165Hz (C Type) about 280Hz (P Type)
- Output contact : SPDT 100VA 200VAC max. 2A max.
- AMP temperature : -20~+60°C  
(No condensation/ no freezing)
- Detector temperature : -20~+80°C  
(No condensation / No freezing  
-20~+120°C (Separate model)
- Detector pressure : 1MPa (10kgf/cm<sup>2</sup>)
- Detector material : SUS304
- Mounting : R1 · 1/2 or flange over 50A
- Explosion-proof : Intrinsic Safety Explosion-proof i2G4  
NIIS No. T36593

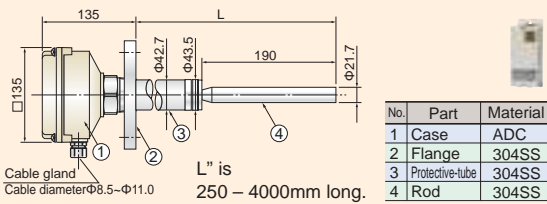
#### Integrated Model **KVS-111-P** Withstand Load · Screwed joint Type



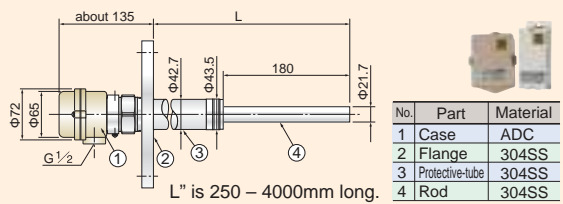
#### Compact & Separate Model **KVS-311-C** Compact & Separate Model · High Sensitivity · Screwed joint Type



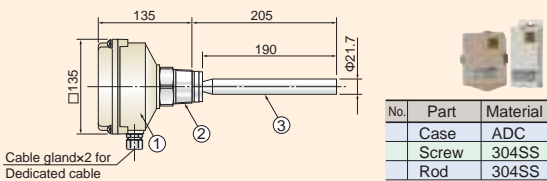
#### Integrated Model **KVS-13□-C** High Sensitivity · Extension Protective-tube · Flange Type



#### Compact & Separate Model **KVS-331-P** Compact & Separate Model · Extension Protective-tube · Flange Type



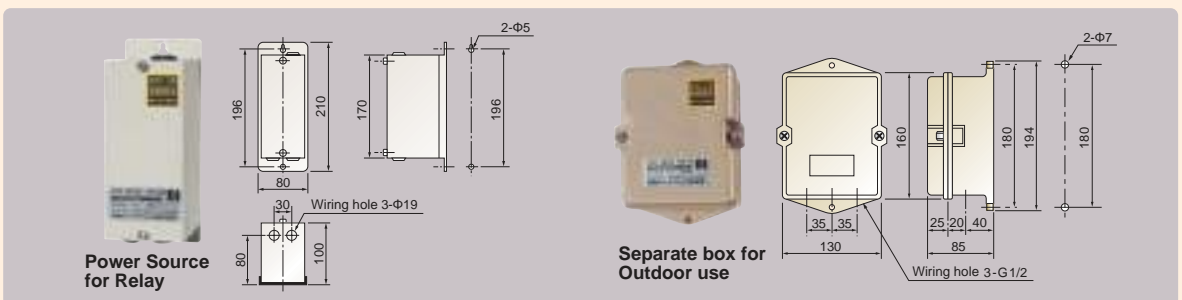
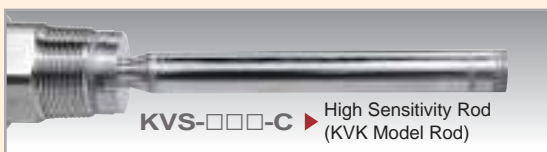
#### Separate Model **KVS-211-C** High Sensitivity · Screwed joint Type



●The compact & Separate model is designed to make the sensor housing smaller.



\*As for the sensor separate model, the length of dedicated cable between sensor & amplifier is 4m at the maximum.





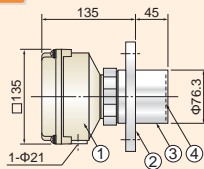
# Model KVF

HERE WE HAVE ONE OF THE FEW FLAT-TYPE VIBRATION MODELS !!

## PRINCIPLE OF OPERATION

A built-in electromagnet vibrates a diaphragm and has it touch on an object to be measured, thus reducing the vibration amplitude, which is electrically detected and is relay-output.

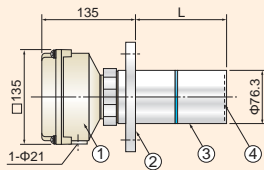
### Integrated Model KVF-121 Flat Type



Standard KVF model for lower limit

No.	Part	Material
1	Case	ADC
2	Flange	304SS
3	Protective-tube	304SS
4	Oscillatory board	304SS

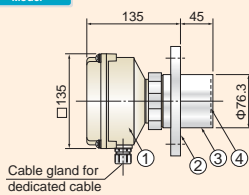
### Integrated Model KVF-132 Extension Protective-tube · Flat Type



Can accommodate a certain limit of length.

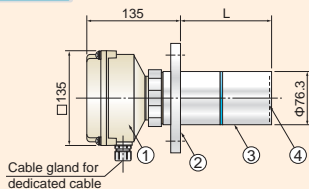
No.	Part	Material
1	Case	ADC
2	Flange	304SS
3	Protective-tube	304SS
4	Oscillatory board	304SS

### Separate Model KVF-221 Flat Type



No.	Part	Material
1	Case	ADC
2	Flange	304SS
3	Protective-tube	304SS
4	Oscillatory board	304SS

### Separate Model KVF-232 Extension Protective-tube · Flat Type



Can accommodate a certain limit of length.

No.	Part	Material
1	Case	ADC
2	Flange	304SS
3	Protective-tube	304SS
4	Oscillatory board	304SS

## STANDARD SPECIFICATION

- Power Source :** 105/210VAC ±10%
- Sensitivity :** Specific Gravity over 0.3
- Frequency :** about 500Hz
- Output contact :** SPDT 250VAC 10A (Resistance load)
- Delay timer :** about 10 sec. max. variable
- AMP temperature :** -20~+60°C (No condensation/ no freezing)
- Detector temperature :** -20~+80°C (No condensation/ no freezing)
- Detector pressure :** 50KPa (0.5kgf/cm<sup>2</sup>)
- Detector material :** SUS304
- Mounting :** Flange over JIS5K65A

## DESIGNATION OF MODEL

### KVK-□□□—Probe's Length

- 1: 205 (Standard)
- 2: 250 ~ 500
- 3: 501 ~1000
- 4: 1001 ~1500
- 5: 1501 ~2000
- 6: 2001 ~ 2500
- 7: 2501 ~ 3000
- 8: 3001 ~ 3500
- 9: 3501 ~ 4000
- 0: other special

### Mounting

- 1: Screwed joint Type R1-1/2 (Standard)
- 2: Standard Probe-Flange Type
- 3: Extension Protective-tube-Flange Type
- 4: Standard Probe-Protective cover, Flange Type
- 5: Extension Protective-tube-Protective cover, Flange Type
- 6: Extension Protective-tube-Screwed joint Type R1-1/2
- 7: Flex. Cable, Screwed joint Type
- 8: Flex. Cable, Flange Typed
- 0: Other special

### Configuration

- 1: Integrated Model of Probe & Amplifier
- 2: Separate Model of Probe & Amplifier
- 3: Compact & Separate Model of Probe & Amplifier

### Explosion-proof

K: High Sensitivity

### KVA-□□□—Probe's Length

- 1: 190 (Standard)
- 2: 250 ~ 500
- 3: 501 ~1000
- 4: 1001 ~1500
- 5: 1501 ~2000
- 6: 2001 ~ 2500
- 7: 2501 ~ 3000
- 8: 3001 ~ 3500
- 9: 3501 ~ 4000
- 0: other special

### Mounting

- 1: Screwed joint Type R1-1/2 (Standard)
- 2: Standard Probe-Flange Type
- 3: Extension Protective-tube-Flange Type
- 4: Standard Probe-Protective cover, Flange Type
- 5: Extension Protective-tube-Protective cover, Flange Type
- 6: Extension Protective-tube-Screwed joint Type R1-1/2
- 7: Flex. Cable, Screwed joint Type
- 8: Flex. Cable, Flange Typed
- 0: Other special

### Configuration

- 1: Integrated Model of Probe & Amplifier
- 2: Separate Model of Probe & Amplifier
- 3: Compact & Separate Model of Probe & Amplifier

### Explosion-proof

A: Withstand lode Type

### KVS-□□□—Electrode Shape

- C: Standard rod
- P: Withstand load rod

### Probe's Length

- 1: 205 (Standard)
- 2: 206 ~ 500
- 3: 501 ~1000
- 4: 1001 ~1500
- 5: 1501 ~2000
- 6: 2001 ~ 2500
- 7: 2501 ~ 3000
- 8: 3001 ~ 3500
- 9: 3501 ~ 4000

### Mounting

- 1: Screwed joint Type R1-1/2 (Standard)
- 2: Standard Probe-Flange Type
- 3: Extension Protective-tube-Flange Type
- 4: Standard Probe-Protective cover, Flange Type
- 5: Extension Protective-tube-Protective cover, Flange Type
- 6: Extension Protective-tube-Screwed joint Type R1-1/2
- 0: Other special

### Configuration

- 1: Integrated Model of Probe & Amplifier
- 2: Separate Model of Probe & Amplifier
- 3: Compact & Separate Model of Probe& Amplifier

### Explosion-proof

S: Explosion-proof

### KVF-□□□—Probe's Length

- 1: 45 (Standard)
- 2: 72 ≤ L ≤ 200

### Mounting

- 2: Standard Probe-Flange Type
- 3: Extension Protective-tube-Flat Type

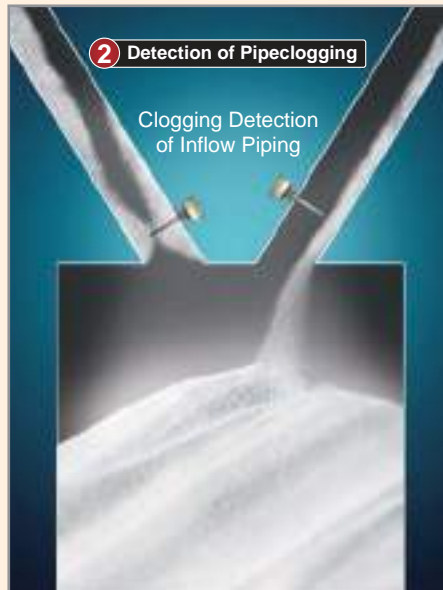
### Configuration

- 1: Integrated Model of Probe & Amplifier
- 2: Separate Model of Probe & Amplifier

### Explosion-proof

F: Flat Type

## APPLICATION

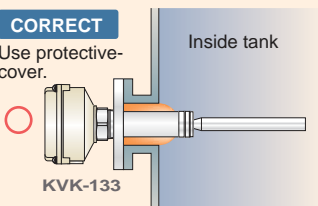


## MOUNTING INSTRUCTIONS

1. Fix the unit in such a way that the vibrating rod may protrude into the tank when it is equipped with a mounting stage.

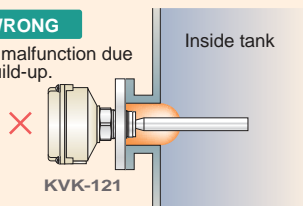
### CORRECT

Use protective-cover.



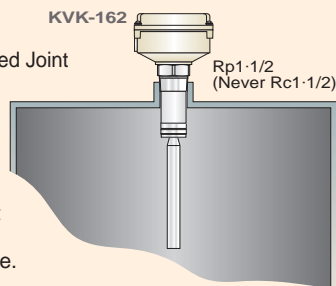
### WRONG

May malfunction due to build-up.



2. As for Extension Protective-tube/ Screwed Joint Type, use a socket of Rp1 1/2 thread (40A) for mounting on a tank-side.

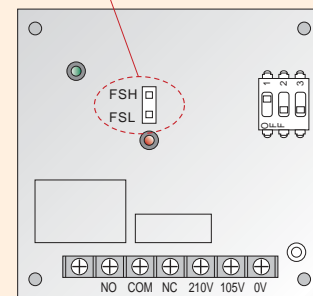
\*Rc1-1/2 thread can not be used.



3. Use 3S at a minimum when you mount with ferrules. The use of 2S will be subject to the type.

## Loaded with Fail-safe function

Fail-safe Switch



E Output contact Power source

**FOR LOEWR LIMIT**

CONNECT TO NO-COM & SET UP [FSL].

**FOR UPPER LIMIT**

CONNECT TO NC-COM & SET UP [FSL].

\*KVK, KVA & KVF have the above function.

## Line of business

- Rotary Paddle Type Level Switch
- Vibration Type Level Switch
- Swing Type Level Switch
- Acoustic Level Switch
- Capacitance Type Level Switch
- Capacitive Proximity Sensor
- Capacitance Type Level Indicator
- Diaphragm Type Level Switch
- Tilt Switch
- Leak Type Level Switch
- Microwave Switch
- Sounding Bob Type Level Indicator
- Flow Switch
- Conductance Type Level Switch
- Float Switch
- Float Type Level Indicator
- Ultrasonic Type Level Indicator
- Equipments For Conveyor Lines
- Dust Monitor System
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- Laser Type Level Indicator
- RADAR Type Level Indicator
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All-round Manufacturer of Level Controllers for Powder, Granules and Liquid

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Agent

\*Please be sure to read USER'S GUIDE, Installation & Operation Instructions before using the instrument.

\*The specifications herein may be subject to change without advance notice.