

## VIBRATION TECHNOLOGY

### Vibrating Level Switch Four features and applications

Top class  
High  
sensitivity

No electrical  
characteristic  
required

High  
temperature  
Applications

No jammed  
by materials

Not only for detecting **ultra-light materials**, but also for detecting **material with a low dielectric constant** that are difficult for capacitance level switch and material that are difficult for paddle type level switch due to **jamming by materials**.

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Product  
Information

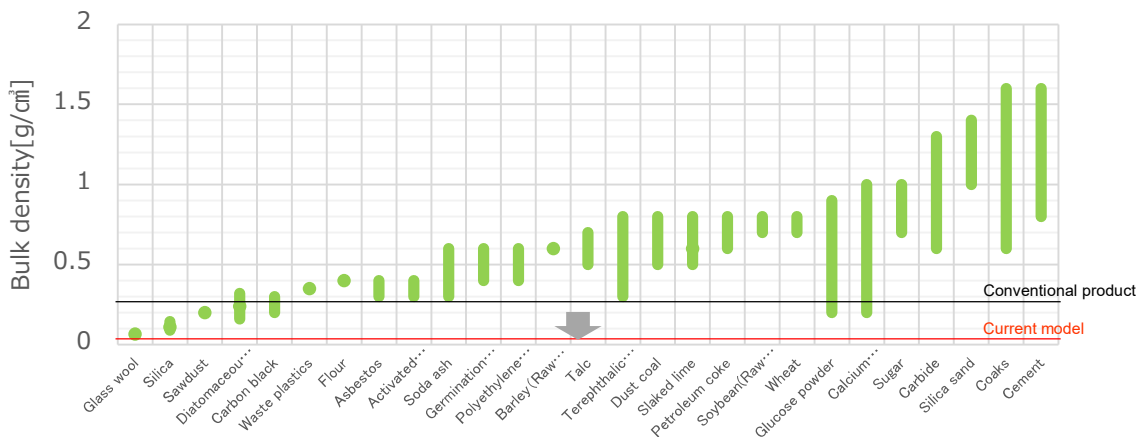


## 1. Four features

Introduction of the four features of the reborn vibrating level switch.

### ■ Super-high sensitivity ■

The tip of the probe detects ultra-light material with  $0.02\text{g/cm}^3$ .  
It can be adjusted by wider sensitivity range due to higher sensitivity.



### ■ Not influenced by electrical characteristics ■

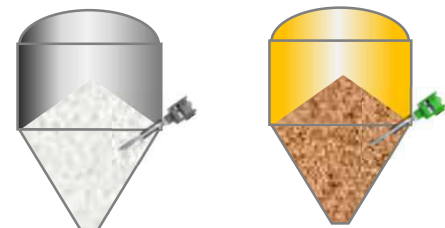
it is not influenced by the electrical properties of the detected object.  
For example, in case of measured material with a low dielectric constant, it is difficult for Capacitance type to detect it reliable.  
On the other hand, Vibrating Switch can detect it reliably regardless electrical characteristics.



e.g., Ferric oxide and silica powder with low dielectric constant

### ■ High temperature spec. as standard

Allowable temperature: **max 150°C** as standard.



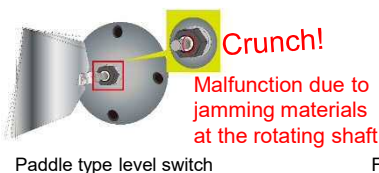
Competitor A: 80°C

Max. 150°C

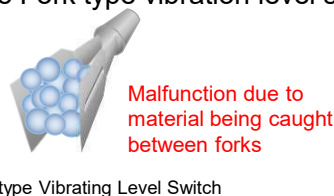
### ■ No malfunction due to jammed or caught condition ■

Since there is no moving part like a Paddle type switch, there is no jammed materials.

Also, there is no caught condition like Fork type vibration level switch.



Paddle type level switch



Fork type Vibrating Level Switch

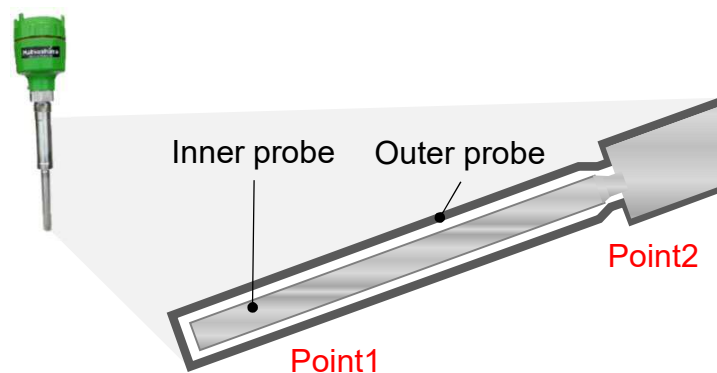


Vibrating Level Switch

## 2. Operating principle

The inner probe is oscillated, which resonates the outer probe.  
When the outer probe touches the material, this resonance is damped and stopped.  
The variation of the resonant strength is detected by the piezoelectric element.

TYPE : MVL-110



### ■ Vibration Technology ■

#### [Point 1]

The key to detect any superlight material is how to stabilize the micro-vibration.  
After the precise calculation of the structure and mass of the vibrating probe and production of many prototypes, we have achieved to detect the material of superlow density  $0.02\text{g/cm}^3$ .

#### [Point 2]

In conventional switches, the piezoelectric element was fixed to the oscillator with any adhesive agent, but it is weak against heat (max.80 deg.C), and in some cases under the heavy environment, the piezoelectric element comes off due to the deterioration.

In this switch, we have newly developed the technology to mechanically fix the piezoelectric element firmly.

As a result of this new technology, the allowable temperature improved (max.150 deg.C) and the probe structure with the piezoelectric element fixed firmly successfully designed.

**Superhigh sensitivity  
and detection of bulk density  $0.02\text{g/cm}^3$  achieved!**

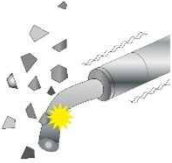


## 3. Precaution for use!

It is not suitable for materials with the following characteristics.

### ① Impact load

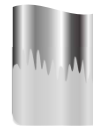
Bulk material generating impact load at charging may damage the probe.



Full Detector recommended

### ② Abrasive materials

If it detects hard materials for long years, the level switch will be worn.



Non-contact Level Meter like Radar level transmitter recommended

### ③ Adhesive materials

The level switch may mistakenly detect even though there is no target material.



Admittance Level Switch recommended

### ④ Materials getting lump

Material getting lump by grasping by hand may make some space around the probe to cause misdetection.



Admittance Level Switch recommended

## 4. Applicable materials

### ① foaming beads



Bulk density: approx. 0.02g/cm<sup>3</sup>

### ② Glass wool



Bulk density: approx. 0.06g/cm<sup>3</sup>

### ③ Silica



Bulk density: approx. 0.1g/cm<sup>3</sup>

### ④ Carbon black



Bulk density: approx. 0.2g/cm<sup>3</sup>

Distributor

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