

**ema**

M-VRS-EN-V1.0

## Stainless Steel Vibrating Fork Level Switches VRS Smart Type



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## Hookup

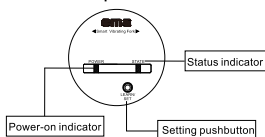


Figure. A

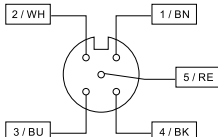


Figure. B

## Mode of Connection

	Relay output:	
	Power input	18~36VDC
	Loading	DC/AC 36V/1A
	NPN/PNP output:	
	Power input	18~36VDC
	Loading	200mA Max.

NPN/PNP output WH: ⊕ Ground connection

## Manual

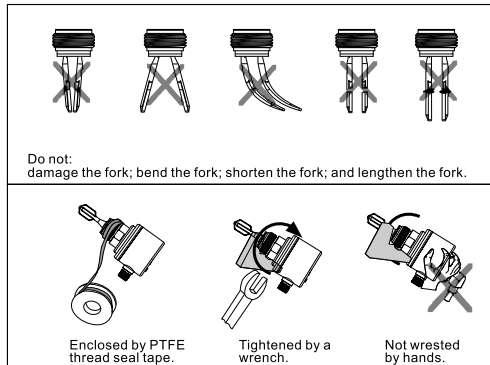
1. Unlock: "SET" button for 10 secs until alternate red and green lights flash. The unit unlocks and returns to the operation mode. The red and green light stop flashing when "SET" button is released.
2. Lock: It is automatically locked when there is no operation within 60 secs.
3. NO / NC setting: Under the unlock condition, hold "SET" button for 3 secs and then the alternate red and green lights flash. When the green LED flashes, release the button to enter NO / NC setting mode and then press "SET" button once to adjust the required status.

4. Learning mode: Put the fork part into the detected medium with stability for 5 secs. Under the unlock condition, hold "SET" button for 3 secs and then the alternate red and green lights flash. When the red LED flashes, release the button. The red LED flashes once in a second orderly to express the status of waiting for learning. The red LED flashes and goes out twice to express the status of learning. The learning setting is successfully finished when the alternate red and green lights flash quickly. Otherwise, the red and green light flashes together and the user has to set the learning function again. To reset the learning, just press "SET" button again to enter second learning mode.

Notice: To enter the second learning mode, please press "SET" button in 3 sec. after first learning finished. Otherwise the user shall be required to process the whole learning mode again to reset the setting. This function is to avoid of the false operation.

Notice:

1. The learning function of this type is not only to overcome the condition of the vibration absorption after the installation on the wall of tank but also to avoid of false operation caused by noise interference.
2. factory setting is based on the density of water (1g/cm<sup>3</sup>). When the density of detected object is higher than or equal to 1g/cm<sup>3</sup>, it can be used normally without setting learning function. Otherwise it needs to reset learning function when the density of detected object is lower than 1g/cm<sup>3</sup>.



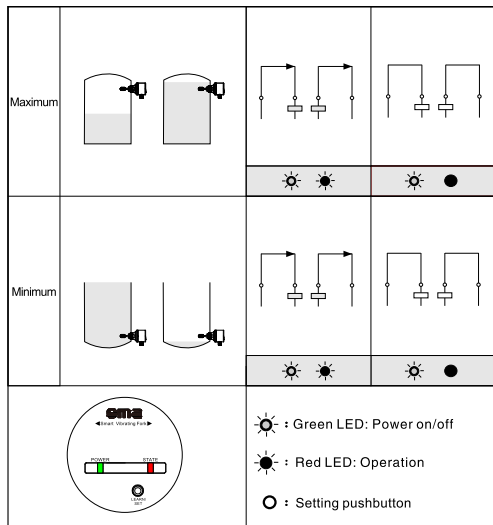
Do not:  
damage the fork; bend the fork; shorten the fork; and lengthen the fork.

Enclosed by PTFE  
thread seal tape.

Tightened by a  
wrench.

Not wrenched  
by hands.

## ■ Status Indicators

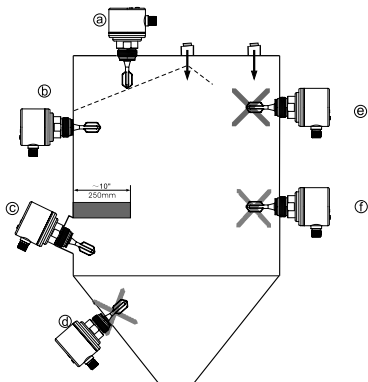


## ■ Technical Datasheet

Type	VRS10	VRS20
Power supply	18...36VDC	
Response time	<1 second	
Ambient Temperature	-40...+70°C/-40...+158°F	
Storage Temperature	-40...+85°C/-40...+185°F	
Medium Temperature	-40...+100°C/ -40...+212°F	-40...+120°C/-40...+248°F (145°C max 1h)
Operating pressure	-1...+40bar	
Detected substance	It can be used to detect any kind of powder, solid, and liquid via the learning function	
Mounting	G¾"A	
Socket	M12 Socket	
Housing material	Stainless steel 316L	
Fork material	Stainless steel 316L	
Output	Relay, Loading DC/AC 36V/1A	
	NPN/PNP, Load 200mA	
Consumption	<1W (PNP/NPN)	
	<2W (Relay)	
Protection	IP68	IP69K

## ■ Installation

1. The ideal installation for reducing the shock to materials and the hanging of materials is to make the switch horizontal at an angle of 15-20°.
2. Keep the switches away from the feed opening of the barrel to reduce the shock to materials, if unavoidable, a protection plate is necessary.
3. The inlet of the connection box should be downward and the fixing nuts of power line must be tightened.
4. The operators cannot use vibration rod to climb or hook any object when working within the barrel.



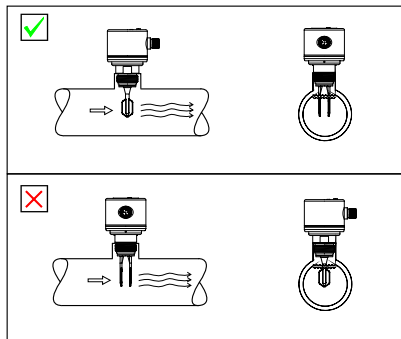
Correct mounting:

- Ⓐ Top-mounted  
Fork is vertical towards bottom and mounted in any position far away from the feed opening of top side. Foam do not affect the Fork switch.
- Ⓑ Laterally mounted  
To reduce the shock and the hanging of the flowing materials.
- Ⓒ Laterally mounted with shield  
length approx. 10 in(250mm),width approx.8 in(200m),  
to reduce the shock of the flowing materials and prevent the improper stock from itself.
- Ⓓ In discharge hopper  
Max. nozzle length 2.4 in (60mm),so that no build-up occurs which prevents the fork from oscillating.

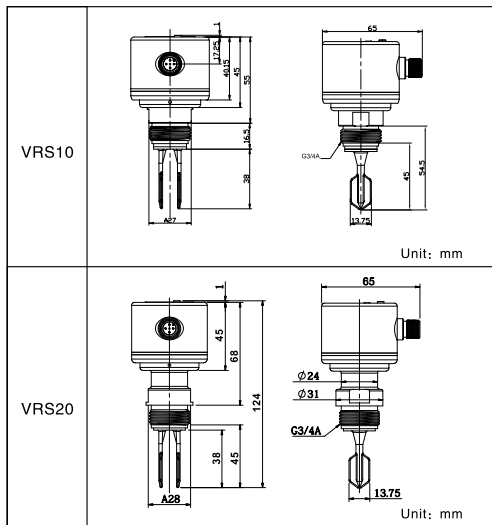
Incorrect mounting:

- Ⓔ Laterally mounted in filling curtain or under the feed opening.
- Ⓕ Incorrect fork orientation  
The surface of fork is subjected to high load caused by discharging material, It may cause false function due to residual material.

**Pay attention to the position of the fork and liquid direction.**

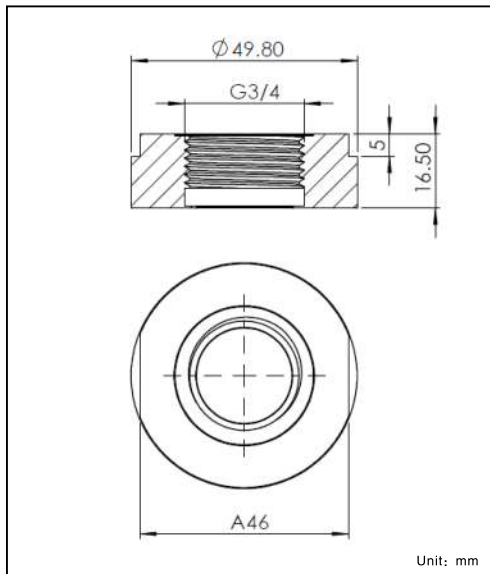


## ■ Dimensions



## ■ Welding adapter for sanitary sensors US0061

### Dimensions



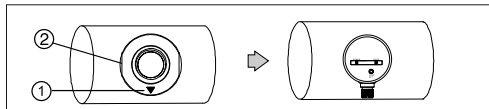
- ⚠ The welding operation must be carried out by authorised personnel.
- It must be carried out carefully and according to state-of-the-art technology.
- During welding and the following cooling phase the sensor must not be in place.
- The surfaces must be free from any soiling.
- Welding tools must be suitable for the adapter and wall material.

### 1. Preparations

- ▶ Bore a hole in the pipe or housing wall with the external diameter of the adapter (max. oversize: 0.2 mm).
- ▶ If possible, screw a cover plug into the adapter .

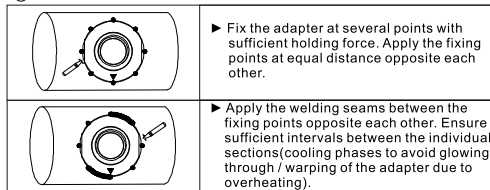
### 2. Welding operation

- ⚠ The power of the welding device must be adapted to the thickness of the wall.



- ▶ Adapter alignment:

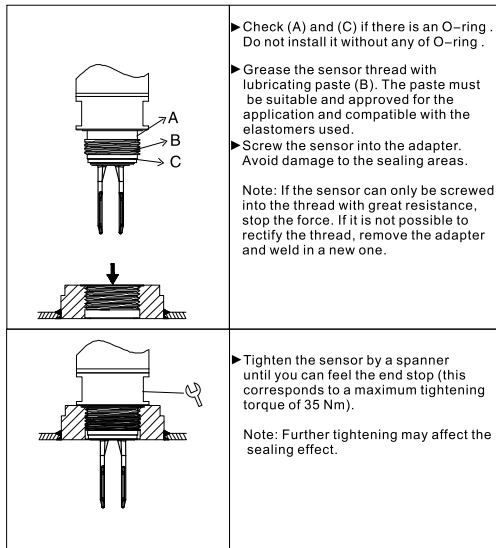
- ① to the marking ▼ for front display of the sensor.
- ② position for the spanner.



### 3. After welding

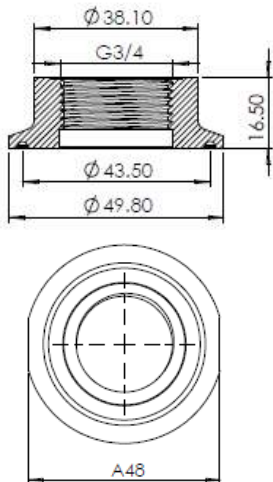
- ▶ Let the adapter cool down.
- ▶ Clean the thread from welding residues.

### 4. Installation of Welding adapter for sanitary fork



## ■ Clamp adapter for sanitary sensors US0062

### Dimensions



Unit: mm

### 1. Installation of Clamp adapter for sanitary temperature sensor

	<ul style="list-style-type: none"> <li>▶ Check (A) and (C) if there is an O-ring . Do not install it without any of O-ring .</li> <li>▶ Grease the sensor thread with lubricating paste (B). The paste must be suitable and approved for the application and compatible with the elastomers used.</li> <li>▶ Screw the sensor into the adapter. Avoid damage to the sealing areas.</li> </ul> <p>Note: If the sensor can only be screwed into the thread with great resistance, stop the force. If it is not possible to rectify the thread, remove the adapter and weld in a new one.</p>
	<ul style="list-style-type: none"> <li>▶ Clamp the sensor + adapter into a clamping device . Tighten the clamping part slightly so that the adapter does not warp.</li> <li>▶ Tighten the sensor by a spanner until you can feel the end stop (this corresponds to a maximum tightening torque of 35 Nm).</li> </ul> <p>Note: Further tightening may affect the sealing effect.</p>

### 2. Install the connection

- Fix the sensor + adapter are fixed to the process connection by a fixing part (coupling nut, clamp adapter, etc.).
- If it is not possible to slide the fixing part down over the top of the unit: slide it up over the bottom of the unit before the adapter is mounted.