

*Thank you for choosing a NIVELCO instrument  
We are sure that you will be satisfied with it throughout its use!*



**NIVOSWITCH**

Vibrating fork level switches  
Series: R-400 / R-500

## 1. APPLICATION

The NIVOSWITCH vibrating forks are for detection of level and flow of liquids. Using them as high or low fail safe switch overfilling of tanks and dry run of pumps can be prevented.

## 2. TECHNICAL DATA

MODEL		R-400	R-500
Wetted parts		St.st. 1.4571 (X 6 CrNiMoTi 17122) or ECTFE (Halar <sup>®</sup> ) coated st.st.	
Process connection		According to the order code	
Housing material		Aluminium: Powder paint coated	Plastic: PBT fibre-glass reinforced, flame-retardant (DuPont <sup>®</sup> )
Temperature ranges	Medium	-40 °C to +130 °C PP flange: -20 °C to +90 °C ECTFE coated st.st. flange: -40 °C to +120 °C, for Derating see diagrams	
	Ambient	-30 °C to +70 °C	
Maximum pressure		40 bar (with PP flange 6 bar) See 2.4 Derating Diagrams	
Probe length		69 to 3000 mm	
Minimum medium density		≥ 0.7 kg/dm <sup>3</sup>	
Maximum medium viscosity		≤ 10000 mm <sup>2</sup> /s (cSt)	
Response time	Getting immersed	≤ 0.5 sec	
	Getting free	≤ 1 sec See 2.4 Response Time Diagram	
Operation mode indicator		Bi-colour LED	
Operation mode selection		Switch for selection of HIGH or LOW fail safe mode	
Output		1 or 2 SPDT relays Relay 1: 250 V AC, 8 A, AC 1      Relay 2: 250 V AC, 6A, AC 1	
Electric connections		M 20 x 1.5 cable gland; Ø 6 to 12 mm cables (0.75 to 2.5 mm <sup>2</sup> wire cross section)	
Supply voltage		20 ... 255 V AC and 20 ... 60 V DC	
Consumption		AC: 1.2 ... 17 VA ;      DC: < 3 W	
Electrical protection		Class I.	
Ingress protection		IP 67 (NEMA 6)	
Weight		1.3 kg + 1.2 kg/m	0.95 kg + 1.2 kg/m

**WARNING!** Temperature difference between inner and outer surface of the ECTFE coated flanges must not exceed 60 °C. If necessary, insulate outer surface of the flange.

### 2.1 ACCESSORIES

- User's manual
- Warranty Card
- Declaration of conformity
- Sealing 2 mm thick made of KLINGER OILIT (for 1" BSP process connection only)
- Plug-in type, 3-pole terminal block (2 pcs for standard and 3 pcs for models with 2 relay)
- Cable gland M 20 x 1.5 (2 pcs)

### 2.2 ORDER CODE

CODE

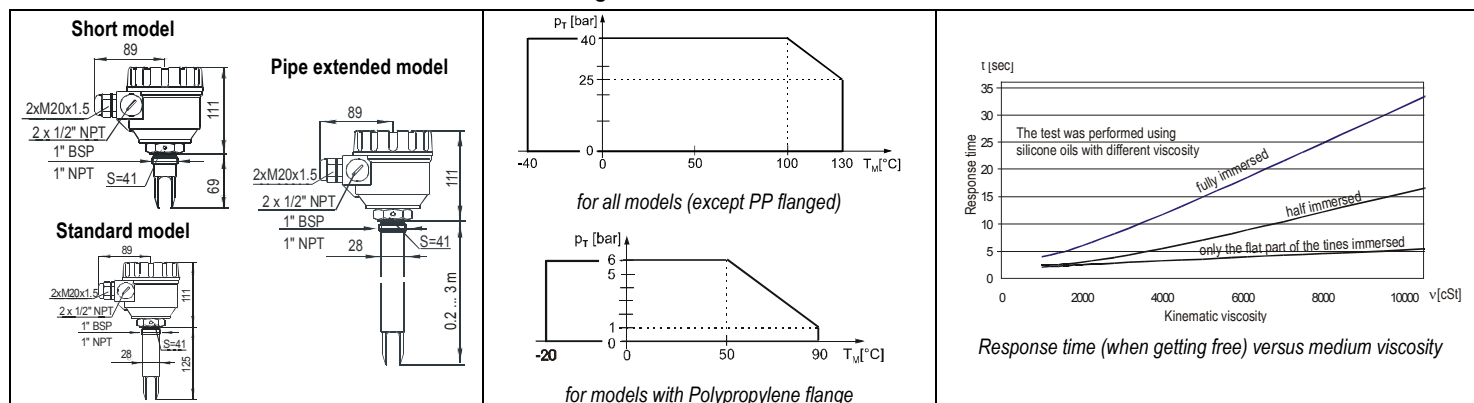
NIVOSWITCH R

FORK	CODE	CONNECTIONS	CODE	HOUSING	CODE	LENGTH	CODE	OUTPUT	CODE
ECTFE coated	D	1" BSP thread	M	Alu. cast	4	Short (69 mm)	00	1 Relay	0
Standard	F	1" NPT thread	P	Plastic	5	Standard (125 mm)	01	2 Relay	A
		DIN DN50PN40 st.st flange	G			0.2 to 3 m	02...30		
		2" ANSI st.st. flange	B						
		50A JIS st.st flange	K						
		DIN DN50 PN16 PP flange	F						
		2" ANSI PP flange	A						
		50A JIS PP flange	J						

### 2.3 DIMENSIONS

### 2.4 Derating DIAGRAMS

### 2.5 RESPONSE TIME - MEDIUM VISCOSITY

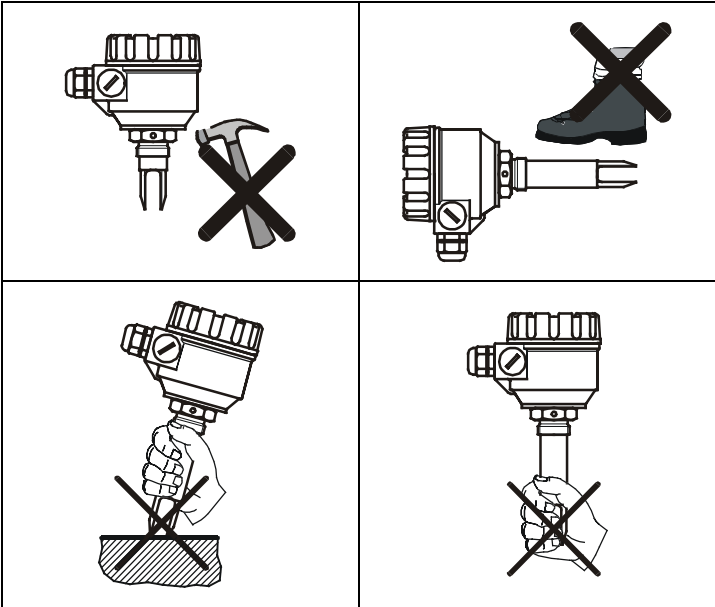


## USER'S MANUAL

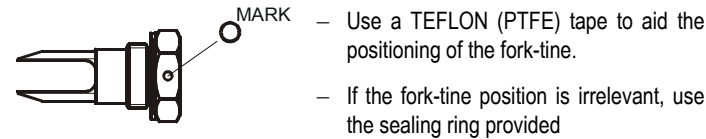


3. INSTALLATION

Prevent the unit from being damaged!



For positioning the fork-tines, use the marking on the hexagonal neck.

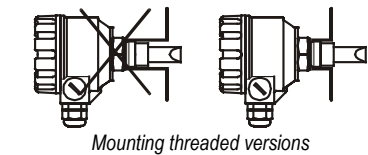
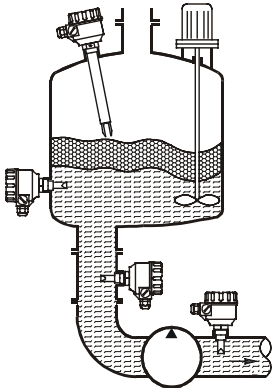


**Do not use housing, to screw the unit into the process connection.  
Do it by means of the sw = 41 mm hexagonal neck.**

After screwing tight the device, the housing can be rotated by hand (max. 300°), to adjust the cable outlets to the required position.

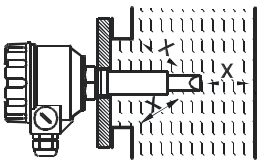
- In applications to liquids with
- low viscosity (without risk of material remaining on the fork-tines) any of the mounting shown beside is possible,
  - high viscosity (due to risk of material remaining on the fork-tines) only vertical (top) mounting can be suggested.

In applications with side mounting vertical positioning of the tines is recommended.

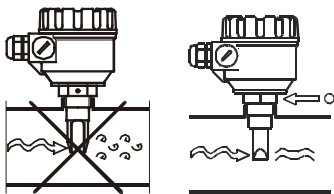


Mounting threaded versions

Installation Options

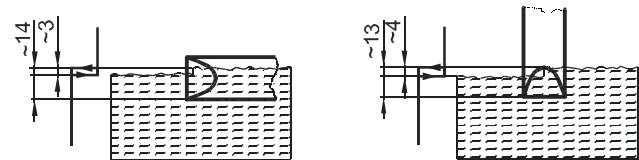


Critical distances ( $x_{min}= 5\text{ mm}$ )



Mounting in pipe fork-tines must be parallel to the direction of flow

SWITCHING POINT, SWITCH DIFFERENTIAL



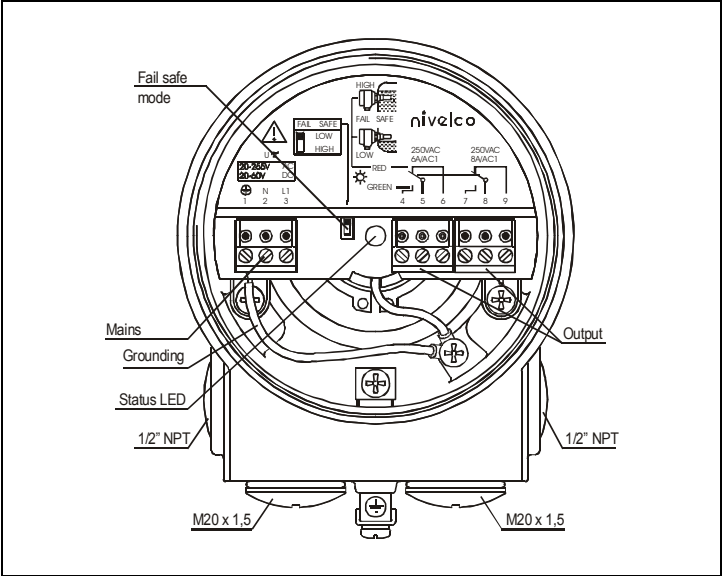
(Values are for water at 25 °C)

Switching point as well as the switch differential slightly depends on liquid density and mounting position.

4. ELECTRICAL CONNECTIONS

Use 6 ... 12 mm outer diameter cables, and tighten cable glands as well as housing cover after installation, to ensure an IP 67 sealing.

Use outside or inside grounding screw terminal for grounding the unit. Common cables must not be used for AC and DC voltage, as well as for low and mains voltage.



5. ADJUSTMENT

Power supply	Fork	Switch pos.	Operation mode		Output
			Fail safe	Status LED	
Yes			HIGH	RED	De-energised
			LOW	GREEN	Energised
			HIGH	GREEN	Energised
			LOW	RED	De-energised
No	Free or immersed	HIGH or LOW	NOT LIT	NOT LIT	De-energised

6. MAINTENANCE

The NIVOSWITCH does not require maintenance on a regular basis. In some instances, however, the vibrating section may need to be cleaned from the deposited material. This must be carried out carefully.

7. STORAGE CONDITIONS

Ambient temperature: -25 to +60 °C

Relative humidity: max. 98%

8. WARRANTY

All NIVELCO products are warranted to be free from defects according to the Warranty Sheet, within two (2) years from the date of purchase.