Technical **Datasheet**

DMVT Series Mini Vibrating Fork Level Switch

For Liquids

Key **Features**

- 2 wires technology
- BSP, NPT threaded connection or Flanged ANSI, EN,
- Side or top mounting
- Forks length up to 3000mm
- Compact construction
- IP65 ingress protection with connector / IP68 with cable
- Plastic covered wetted parts option
- ATEX Construction

Series Overview

The mini vibrating Fork Level Switch, offers a compact solution based on single point level switching of liquids.
This series of Level switches, together with our ultrasonic type of switches, complete our range of electronic instruments designed for the controls of liquids.
The operating principle is similar to the vibrating fork type for solids: the forks are kept in vibration by the electronic circuits. As the medium reaches and covers the forks, the fork vibration changes. The damping in the vibration is detected by the electronics which activates the output relay, to switch, after a configurable time delay. The fork will start to vibrate again, once the medium sets it free. Forks can be also be manufactured with a plastic coating, for use on aggressive medium.

Product **applications**

- Compact water treatments system
- Chemicals
- Fuels pumps & tanks
- Hydrocarbons

Other products

Other products we can offer:

- Ultrasonic compact level switch 003
- Compact vibrating fork level switches

How can we **help you?**

Delta Mobrey offers fast, efficient and knowledgeable support when and where you need it. Please visit our website at www.delta-mobrey.com to find your local support centre or call us on:
+44 (0)1252 729140

Mini-Vibrating Fork Level Switch
Series: DMVT

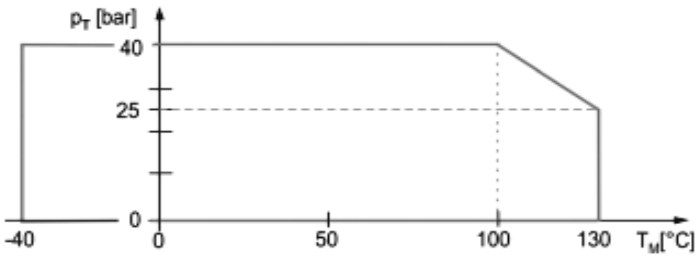
Vibrating Fork Level Switch	
Medium density	≥ 0.7 kg/dm^3
Medium viscosity	≤ 10,000 mm2/s (cSt) (0.1 ft²/s)
Process Temperature	-40 °C … +130 °C (-40 °F … +266 °F) refer to temperature diagram below
Ambient Temperature	-40 °C … +70 °C (-40 °F … +158 °F) ; –25°C… +70 °C with M12 connector
Process Pressure	max. 40 bar (580 psi g) for 1.4571 , max 6 bar for PP flange version (see table below)
Process connection	Flanged connection. Please refer to the below pressure diagrams
Standard Fork length	Threaded BSP, NPT, Sanitary, ANSI/ISO flanges, Clamp/DIN 69mm
Extended rod for type	03...3000mm
Special insertion length	300 to 3000mm (7,87in-10ft)
Wetted parts materials	1.4571 (AISI316Ti) or ECTFE/PFA coating
Conduit connection	DIN43650 or M12 connector ; 3mt cable 2x0,5mm^2 / 4x0,75mm^2 / 5x0,5mm^2
Electrical protection	AC power supply Class I ; DC power supply : Class III
Response time	≤ 0.5 seconds when immersed ; 1s when free (see viscosity diagram)
Power supply	(2 wires) 20...255 Vac or 15...29 Vdc ; (3 wires) 12...55Vdc
Power consumption	< 3W
Housing material	1.4571 Stainless Steel
Housing rotection	IP65 with DIN connector / IP67 with M12 connector / IP68 with cable
Weight	0.5kg + 1.1kg/m extension (2.85lb + 0.8 lb/ft extension);
State indication	Bi-colour LED Green/Red (connector version only)
Programmable function	High / Low via internal switch (connector version only)
Output Signal : 2 wires DC	DC Current change : 14mA +/-1mA when immersed / 9mA +/-1mA when free
Output Signal : 2 wires AC	AC Output for serial connection: Voltage drop (in switched-off state) < 10.5V Residual current (in switched-ff state)< 6mA Current Load: max continuous 350mA AC13 ; min continuous 10mA 255V/25mA 24V Max impulse: 1.5A 40 ms
3 wires DC	Transistor switch: NPN/PNP output realized with different wiring Voltage drop in switches on state <4.5V Current load 350mA / U_{max} = 55V Residual current in switched off state <100 µA

PRESSURE / TEMPERATURE DIAGRAMS

(all metallic wetted parts)

Medium Pressure (Pt)

Medium Temperature (Tm)

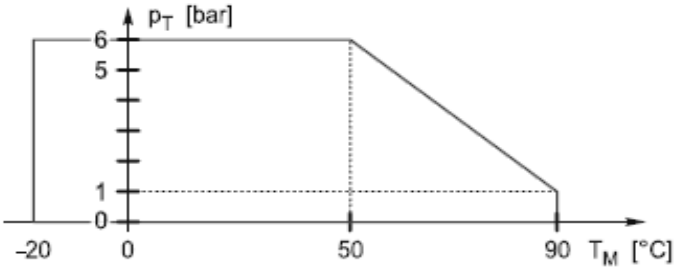


PRESSURE / TEMPERATURE DIAGRAMS

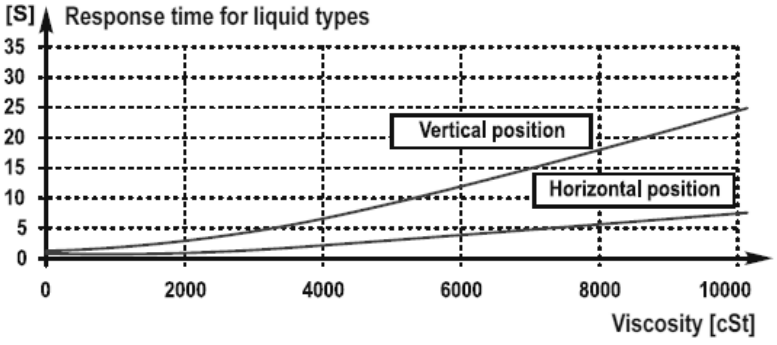
(PP flange version)

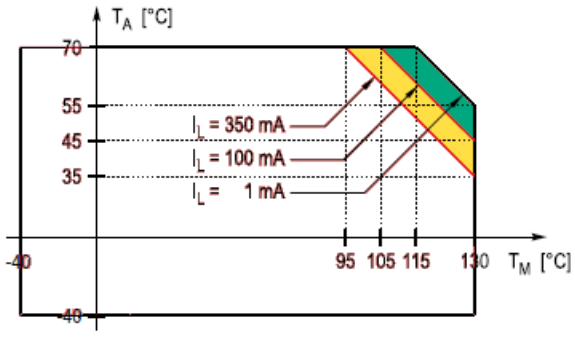
Medium Pressure (Pt)

Medium Temperature ™



RESPONSE TIME DIAGRAM

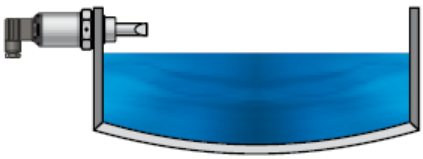
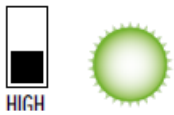
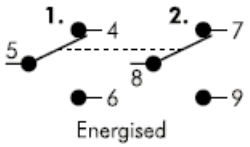
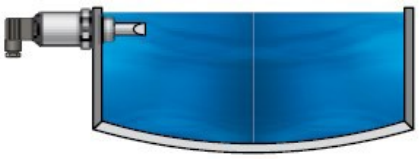
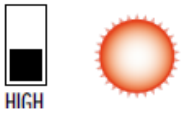
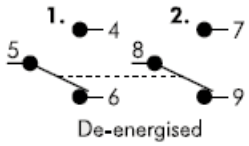
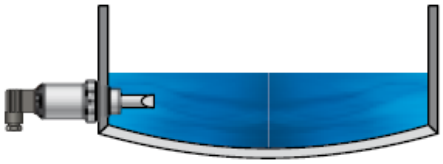
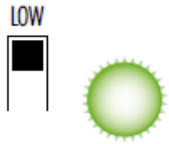
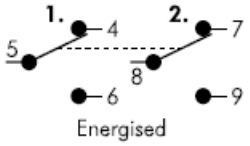
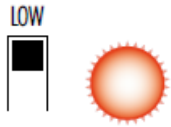
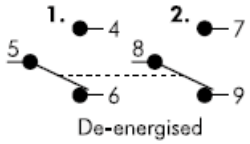




T_A = Ambient temperature
T_B = Process temperature
I_A = Load current with DC power supply

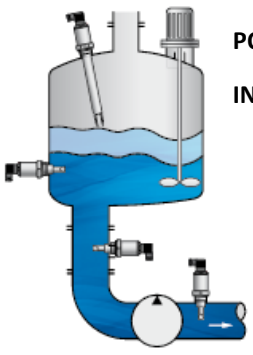
Vibrating Fork Level Switch
Series: DMVT

ACTION SETTING

MODE	FORK	SWITCING	SWITCH & LED	RELAY OUTPUT
High Level	Free			
	Immersed			
Low Level	Free			
	Immersed			

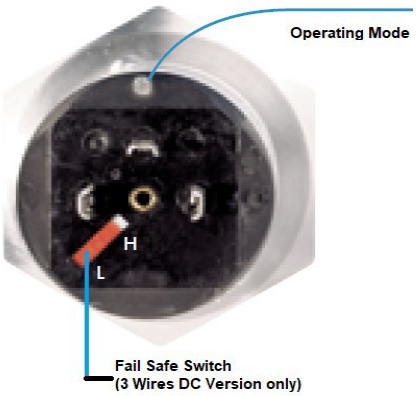
ACTION SETTING 2 WIRES VERSION

FORK	SWITCING	SWITCH & LED	RELAY OUTPUT
Immersed			14 +/- 1mA
Free			9 +/- 1mA



POSSIBLE INSTALLATION

CONNECTOR VERSION ONLY



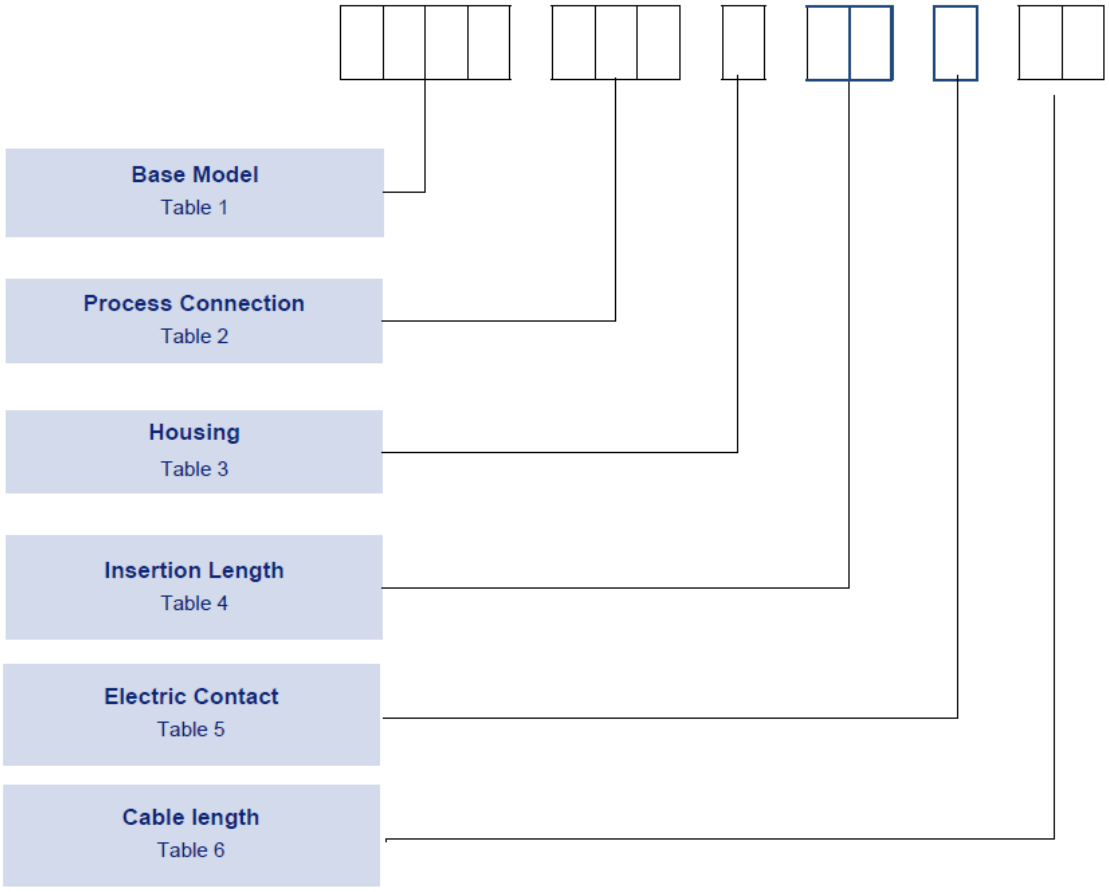
SELECT OPERATING MODE	
FAIL-SAFE	
	FAIL-SAFE alarm is indicated with de-energized relay or open state of the output
	

Vibrating Fork Level Switch
Series: DMVT

How to order

Vibrating Level Switches can be configured by selecting codes representing the desired features from the tables that follow.

The table below, describes how the model code is built up. For assistance in configuring a transmitter that best suits your needs, please contact your local sales office.

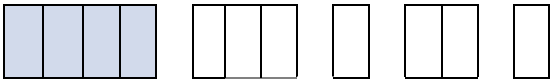


Application & Construction

The Vibrating Fork Level Switch is applicable for liquids with minimum 0.7 kg/dm3 density and with max 104 mm2/s of viscosity.
A large variety of applications are possible. These range from the level detection to overfill or dry-run pump protection. Water industry, Chemical and Petrochemical industry for aggressive fluids.
The main objective is to keep the forks away from obstacles, rotating devices (mixers) and vibrations, there are no particular precautions to be considered for a correct installation of this product and the position of the forks is clearly marked on the hexagon for mounting.
This instrument can be mounted in any position. It can be also mounted on the side of the container but we suggest you select a position where the forks are easily freed from the medium or protected from the deposit of solids mixed with the liquid.
An internal switch allows for easy configuration of the instrument according to the application required: detecting the level of process, or the density, or the process.
The instrument has a standard immersion probe but several different length are available, according to the installation requirement.
An led indicates the status of the instrument, if the device is in alarm condition or not.

Base Model

TABLE 1



Description	Code
Stainless Steel forks with tumble polish	**DMVTB**
ECTFE coated fork, PTFA coated extension , PP or ECTFE coated process connection	**DMVTT**
Stainless Steel fork high polished	**DMVTP**
Stainless Steel forks tumble polish, ATEX	**DMVTG**
Stainless Steel fork high polished, ATEX	**DMVTU**

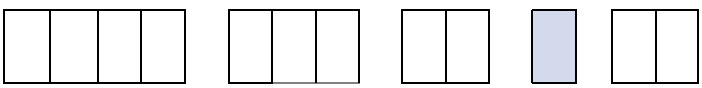
Process Connection

TABLE 2

Description	Type	Code
1“ BSP mounting	DMVTB/P/G/U	**FPB**
1“ NPT mounting	DMVTB/P/G/U	**FNB**
1- 1/2 “ TRI-CLAMP (ISO2852) in St. Steel	DMVTB/P/G/U	**NCB**
2“ TRI-CLAMP (ISO2852) in St. Steel	DMVTB/P/G/U	**7CB**
DN40 Pipe Coupling (DIN11851) in St. Steel	DMVTB/P/G/U	**7DB**
DN50 Pipe Coupling (DIN11851) in St. Steel	DMVTB/P/G/U	**NDB**
FLANGED DN40 PN10/16/25/40 in St. Steel	DMVTB/P/G/U	**HKF**
FLANGED DN50 PN40 / 25 in St. Steel	DMVTB/P/G/U	**KKF**
FLANGED 2” ANSI 600RF in St. Steel	DMVTB/P/G/U	**KCF**
FLANGED JIS 40K 50A in St. Steel	DMVTB/P/G/U	**HJF**
FLANGED DN40 PN10/16/25/40 in St. Steel	DMVTT	**HKV**
FLANGED DN50 PN40 / 25 St. St. ECTFE coated	DMVTT	**KKV**
FLANGED 2” ANSI 600RF St. St. ECTFE coated	DMVTT	**KCV**
FLANGED JIS 40K 50A St. St. ECTFE coated	DMVTT	**HJV**
FLANGED DN50 PN16 in PP	DMVTT	**KKP**
FLANGED 2” ANSI 150RF in PP	DMVTT	**KCP**
FLANGED JIS 10K 50A in PP	DMVTT	**HJP**

Insertion Length

TABLE 4



Description	Type	Code
Standard short length 69mm	DMVTB/T/P/G/U	**00**
Standard long length 125mm	DMVTB/T/P/G/U	**01**
Standard extended length 200mm	DMVTB/G	**02**
Customized length 0.2…..3000 mm	DMVTB/T/P/G/U	**XX**

Note 1: Shortest forks 69mm and 125mm are available only for Stainless Steel, standard polished forks. Type B/P
Any other construction start from 200mm length.

Electric Contact

TABLE 5 | | | | | | | | | | | |

Note 1: The mini version of the switches, are designed for OEM applications and offers a wider range of output signals, to meet the requirement of several types of receivers normally used in compact constructions.

Description	Type of Output	Code
2 wires AC DIN Connector	AC output for serial connection	**1**
2 wires AC DIN Cable	AC output for serial connection	**2**
3 wires DC DIN Connector	NPN ; PNP Transistor output	**3**
3 wires DC DIN Cable	NPN ; PNP Transistor output	**4**
2 wires DC DIN Connector	Dc Current change	**6**
2 wires DC DIN Cable	Dc Current change	**7**
2 wires DC DIN Connector, Exia G	Dc Current change	**8**
2 wires DC DIN Cable, Exia G	Dc Current change	**9**
2 wires DC M12 Connector	Dc Current change	**K**
2 wires DC M12 Connector, Exia G	Dc Current change	**L**
3 wires DC M12 Connector	NPN ; PNP Transistor output	**M**

Cable Length

TABLE 4 | | | | | | | | | | | |

Description	Type	Code
Standard cable length 3 mt	DMVTB/T/P/G/U	**00**
Special length over 3 mt up to 30 mt	DMVTB/T/P/G/U	**XX**

Approvals

EUROPEAN DIRECTIVES

Electromagnetic Compatibility Directive (EMC) 2014/30/EU
Compliant to EMC directive

Low Voltage Directive (LVD) 2014/35/EU
Compliant to LVD directive

Pressure Equipment Directive (PED) 2014/68/EU:
This product is outside the scope of the PED directive

INTRINSICALLY SAFE

Certificate No.: BKI24ATEX0020X
EN IEC 60079-0, EN 60079-11, EN 60079-26

Enclosure code G/U (refer Table 1) For Zone 1
II 1G Ex ia IIC T6/T4 Ga
Tamb & Tmedium as table below

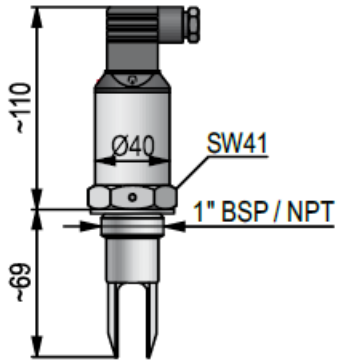
Temperature Class			T6	T6	T5	T4
T amb.	Maximum	All	70°C	60°C	60°C	60°C
	Minimum	DMVT*-***-**8/9-**	-40°C	-40°C	-40°C	-40°C
		DMVT*-***-**L-**	-25°C	-25°C	-25°C	-25°C
T medium		All	70°C	75°C	95°C	130°C

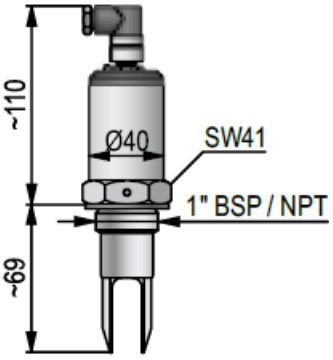
Special Engineering

None listed options or special constructions can also be designed to meet specific requirements of an application.
Please contact us for further information, on the details below.

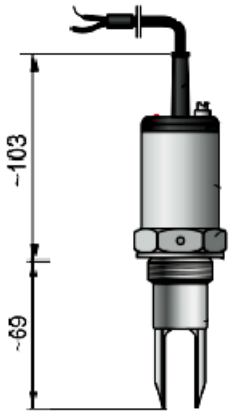
Dimensional Drawings

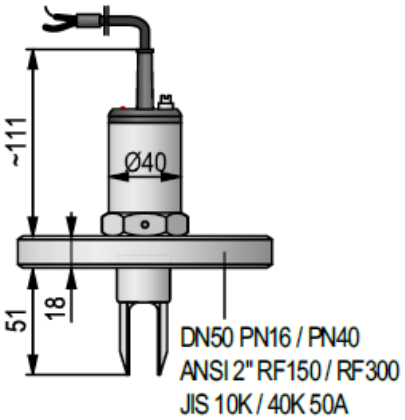
Standard lengths 69mm with DIN connector, cable outlet



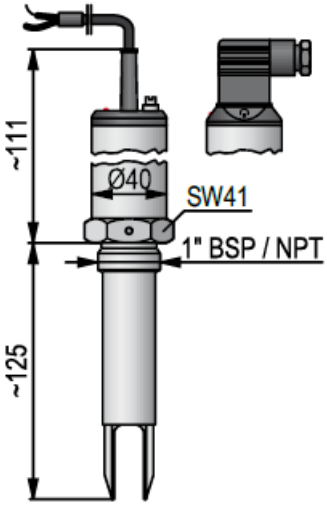


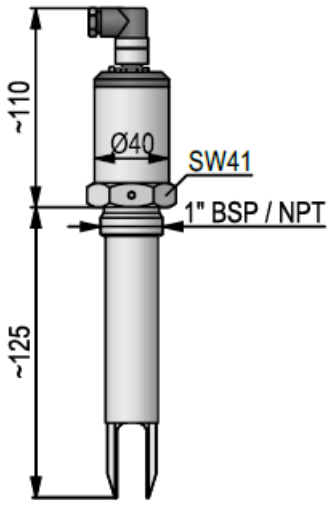
Flanged version and standard fork length

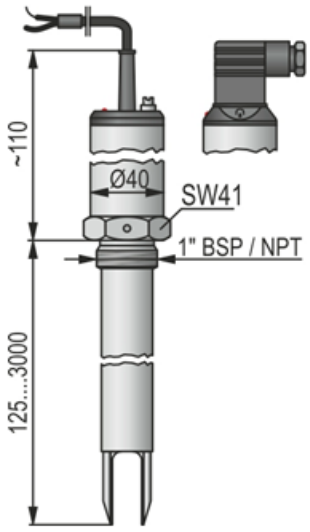




125mm Fork length and extended version 300 to 3000mm







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