Level Instrumentation

Vibrating Fork Level Switch – 135 VL

The 135-VL covers a large variety of level detection applications and more….high/ low fail safe limit switch, overfill or dry run protection, pump controls, dry / wet indication in pipes etc.

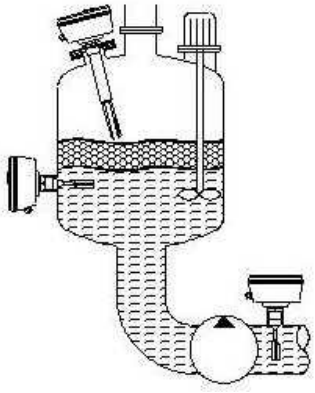
- ❑ General purpose level switch with intelligent electronics applicable for:
  - almost all liquids
  - light, free flowing solids
- ❑ Two output versions:
  - power relay with DPDT
  - PNP/NPN open collector contact output (for use with PLC's and for Alarm Annunciation)
- ❑ PVDF/ECTFE(HALAR) coated versions for corrosive or sticky media
- ❑ Fit and forget device: simple installation – no maintenance
- ❑ Switching performance does not depend on the change of liquid conductivity, dielectric constant, viscosity, pressure and temperature.
- ❑ Probe extension upto 3 m length.
- ❑ Suitable for Food, Edible oils and hydrogenated fats.
- ❑ Flange or collet sleeve options
- ❑ Hygienic / Sanitary connections
- ❑ Hygienic versions with various process connections (and 1.4 micron fine polishing) for Milk / Food applications.
- ❑ High or Low Fail Safe mode, field selectable.
- ❑ Switching sensitivity Low High, field selectable
- ❑ Bright Bi-colour LED indication. Colour changes from Green to Red under alarm condition.

The ever-growing popularity of the 135-VL Vibrating Fork Type Level Switches is ensured by their versatility, provided by their principle of operation. The 135-VL is a Vibrating Fork Level Switch mainly for Liquids and free-flowing low-density solids. It works on the principle of a change in frequency of a Vibrating Fork due to presence of a liquid / solid. The change in frequency is detected by a frequency to voltage converter. The voltage proportional to frequency is compared to a set voltage by a comparator, which drives a relay or provides open collector output.

The 135-VL can be used in almost all liquids: aggressive liquids (acids, solvents), high viscosity liquids it is unaffected by foam, turbulence and gas contents. It can also be used on light and medium density free flowing granules and powders.

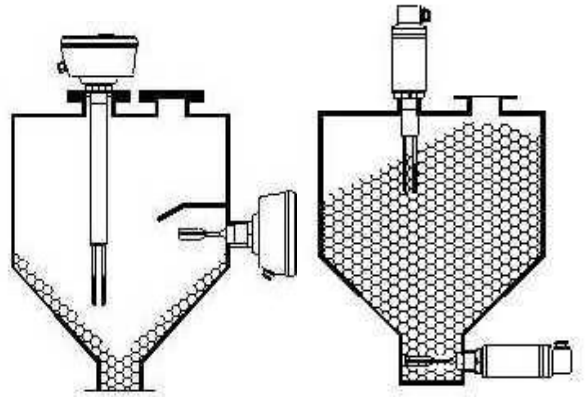
APPLICATIONS:

Free flowing solids
Use only on free flowing materials stored in small vessels, hoppers



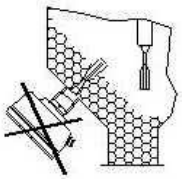
Side mounting is Recommended only in case of free flowing molecules. In case of side mounting, the 135-VL must be mounted with the fork-tines standing vertically (look for the "dimple" on the hexagonal boss.)

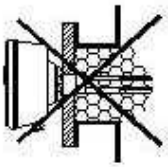
Use only on free flowing materials stored in small vessels, hoppers.



Protect the probe from falling material !
Fork-tines should not be exposed to mechanical load.

Adjust switching sensitivity for solid and liquids according to table.

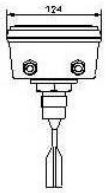




Do not adjust a high sensitivity than necessary, as this may result in the probe indicating even slight residues of material adhering to it. Avoid mountings shown in high viscous liquids and powders.

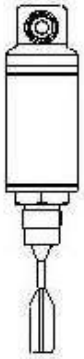
135-VL is offered in two output versions….. **Relay output** and **Open Collector Output**
The switch consists of 2 modular units. The output module and the Process Connection & Fork.

SWITCH VERSION – RELAY OUTPUT VL-R



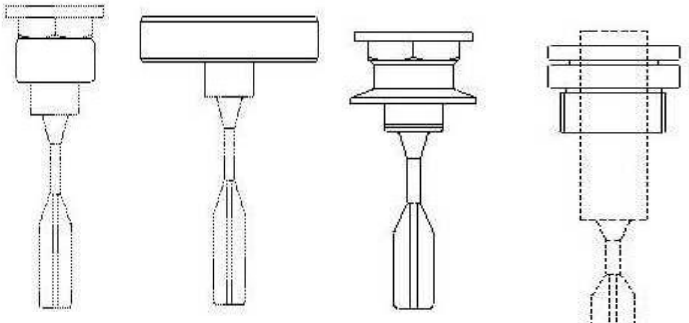
135-VLR is the relay version with robust Aluminium housing; visible, large bi-colour output state indication LED; power relay with DPDT potential free output and a selectable power supply 230/115 VAC & 24 VDC

OPEN COLLECTOR OUTPUT (PNP/NPN OUTPUT) VL-C



135 VL-C is the mini version incorporating a Stainless Steel housing, visible bi-colour output state indication LED, 3 wire PNP/NPN transistor output with 24 VDC supply

PROCESS CONNECTION



THREADED
1"BSP
1"NPT

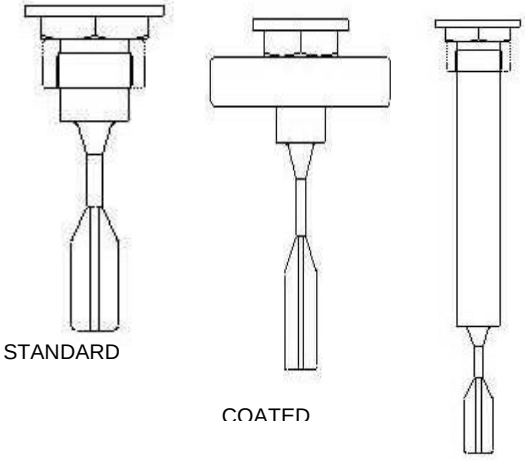
INTEGRAL FLANGE

TRI-CLAMP SANITARY

1 ½" BSP/NPT COLLET

INTEGRAL FLANGE ONLY FOR COATED VERSION

FORK VARIATIONS



STANDARD

COATED

WITH EXTENSION UPTO 3M

SPECIFICATIONS

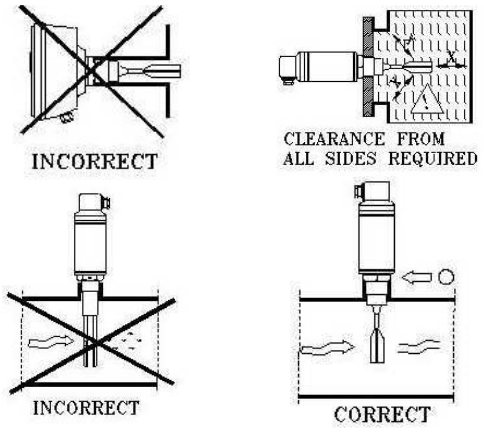
Fork material	SS316
Process connection	Threaded / Flanged / Triclamp
Maximum Pressure *	30 kg/cm^3 *See note #
Media temperature	- 20ºC to + 130ºC
Ambient temperature range	- 20ºC to + 70ºC
Insertion length	127 to 3000 mm
Process connection size	Min. 1" BSP / NPT or 1" flanged

Density of medium	Liquid	≥ 0.5 kg/dm^3
	Solids	≥ 0.05 kg/dm^3
Liquid viscosity		≤ 10000 cst
Response time		≤ 1 sec
Output mode indicator		Bi-colour LED, Green Normal Red –Alarm
Sensitivity settings For Liquids – Low - If density ≥ 0.7 kg/dm^3 For Solids - Low - If density ≥ 0.5 kg/dm^3		

For Higher pressures consult factory
Atmospheric 135-VL X C,U,P,Q versions

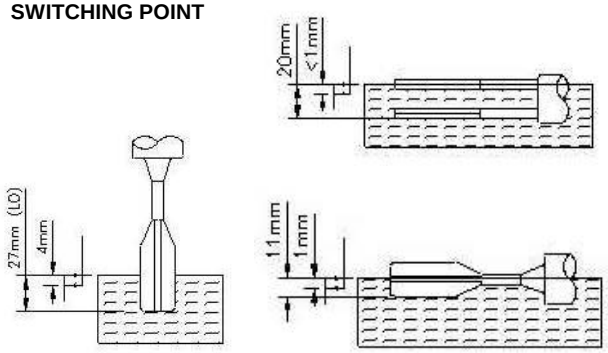
POSITIONING POINT

For positioning the fork-tines use the marking on the Hexagonal neck



Use a TEFLON (PTFE) tape to position the fork-tines.

SWITCHING POINT

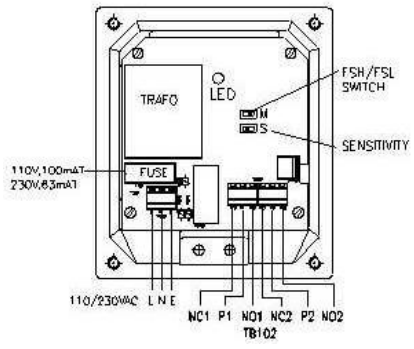


Liquids: Switching point as well as the switch differential depends on liquid density and mounting position. (Values are for water at 25 °C).

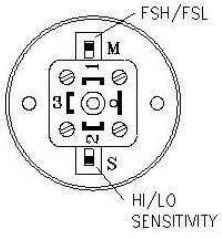
Solids : Switching point as well as the switch differential depends on material quality and mounting position.

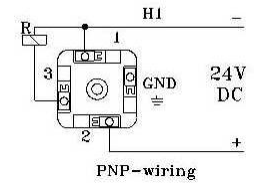
DESCRIPTION	RELAY OUTPUT VERSION	3 WIRE PNP-NPN OPEN COLLECTOR VERSION
Model	135 VL-R	135 VL-C
Housing Material	Polyurethane painted Aluminium	Stainless Steel, 304
Fail safe high/low selection	By slide switch (field selectable)	By slide switch (field selectable)
Sensitivity programming (Low/High Density)	By slide switch (field selectable)	By slide switch (field selectable)
Output rating	Potential free DPDT relay, 250 VAC, 5 A	PNP/NPN Transistor : 350 mA max.
Electric connections (wire cross section) (1.5 sq.max.)	(2 x ¾" UNF) 2 x ½" NPT (standard)	Reverse polarity, over-current and overload Protection – connector PG 11
Supply Voltage	115/230 VAC, 24 VDC (selectable)	24 VDC ± 10%
Consumption	< 5 VA	< 2.7 W
Mechanical protection	IP 65	IP 65 (with boot)
Weight (standard)	≤ 1.6 kg	≤ 0.8 kg

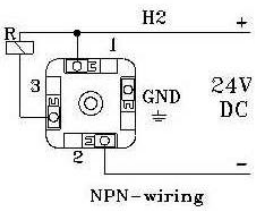
CONNECTIONS



RELAY OUTPUT







PNP/NPN OPEN COLLECTOR

ORDERING INFORMATION

135 VL X X X XX X L = XXXX

OUTPUT TYPE
R – RELAY
C – NPN/PNP OPEN COLLECTION OUTPUT

SUPPLY VOLTAGE FOR VLR
1 – 24 VDC
2 – 110 VAC
3 - 230 VAC

PROCESS CONNECTION
B - THREADED 1" BSP
N - THREADED 1" NPT
S - SLIP ON FLANGE
I - INTEGRAL FLANGE (FOR COATED VERSION ONLY)
C* - 1 ½" BSP COLLET
D* - 1 ½" NPT COLLET
T* - TRICLAMP 1 ½ " ISO 2852
U* - TRICLAMP 2" ISO 2852
P* - PIPE COUPLING DIN 1185/40 NP
Q* - PIPE COUPLING DIN 1185/50 NP

FLANGE SIZE & RATING(PRESSURE RATING : 150#)
00 – NOT APPLICABLE
11 – 1" ANSI
16 – 1 ½" ANSI
21 – 2" ANSI
26 – 2 ½" ANSI
31 – 3" ANSI
41 – 4" ANSI
51 – 5" ANSI
61 – 6" ANSI
99 – ANY OTHER SIZE AND STANDARD

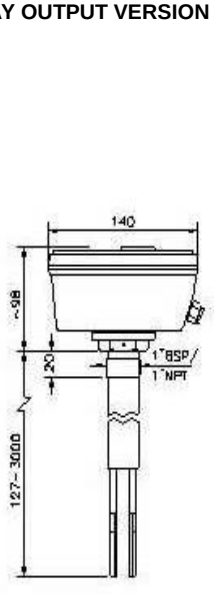
MATERIAL OF CONSTRUCTION
2 – CS (for flange only)
4 – SS 304 (for flange only)
6 – SS 316
8 – PVDF COATED /HALAR (for integral flange only)

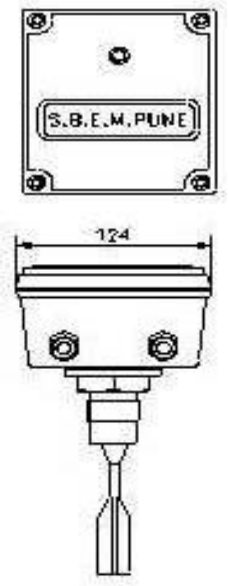
INSERTION LENGTH IN MM
STD 127

❑ **NOTE :** 1)* For atmospheric pressure duties only**.** 2) Collet type connection available for extension length > 300 mm only**.**
3) For 135 VLC always 24 VDC supply is required.

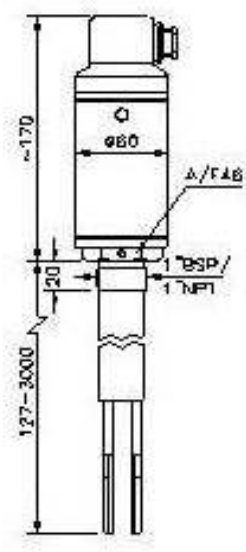
DIMENSIONS

RELAY OUTPUT VERSION





3 WIRE PNP/NPN (OPEN COLLECTOR OUTPUT)



*** Continuous developments may necessitate changes without notice.

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