

Instructions manual

Series VH
Paddle flow switch



CE EAC

PREFACE

Thank you for choosing a product from Tecfluid S.A.

This instruction manual allows the installation, configuration, programming and maintenance. It is recommended to read it before using the equipment.

WARNINGS

- This document shall not be copied or disclosed in whole or in any part by any means, without the written permission of Tecfluid S.A.
- Tecfluid S.A. reserve the right to make changes as deemed necessary at any time and without notice, in order to improve the quality and safety, with no obligation to update this manual.
- Make sure this manual goes to the end user.
- Keep this manual in a place where you can find it when you need it.
- In case of loss, ask for a new manual or download it directly from our website www.tecfluid.com Downloads section.
- Any deviation from the procedures described in this instruction manual, may cause user safety risks, damage of the unit or cause errors in the equipment performance.
- Do not modify the equipment without permission. Tecfluid S.A. are not responsible for any problems caused by a change not allowed. If you need to modify the equipment for any reason, please contact us in advance.

TABLE OF CONTENTS

SERIES VH

1	INTRODUCTION	4
2	WORKING PRINCIPLE	4
3	MODELS	4
4	RECEPTION	5
5	INSTALLATION	5
5.1	Electrical connection	6
6	MAINTENANCE	7
7	TECHNICAL CHARACTERISTICS	7
8	SAFETY INSTRUCTIONS	8
8.1	Pressure equipment directive	8
8.2	Certificate of conformity TR CU (EAC marking)	8
9	ADDITIONAL INSTRUCTIONS FOR THE ATEX VERSION	8
9.1	Non-metallic parts	8
10	SWITCHING FLOW RATES	9
11	DIMENSIONS	10

SERIES VH

1 INTRODUCTION

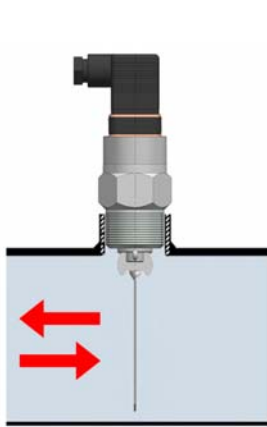
The series VH are mechanical flow switches based on the displacement of a paddle by the force of movement of a flowing liquid. This displacement becomes a detection signal.

2 WORKING PRINCIPLE

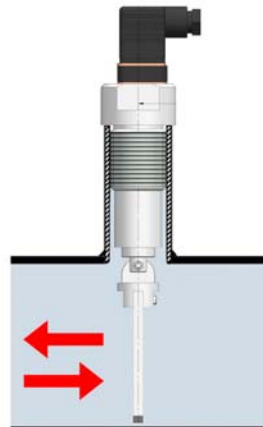
A liquid flows inside a pipe fast enough to move a paddle, which at the same time moves a permanent magnet. This magnet acts over a bi-stable SPDT and potential free reed switch, that changes its state. The magnet-reed switch system is isolated from the liquid.

The flow switching point is positioned between 30° and 45° from the zero position.

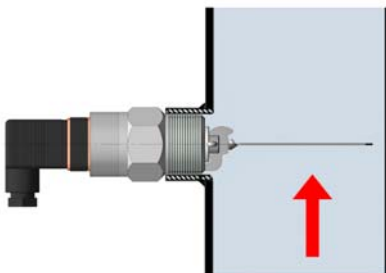
3 MODELS



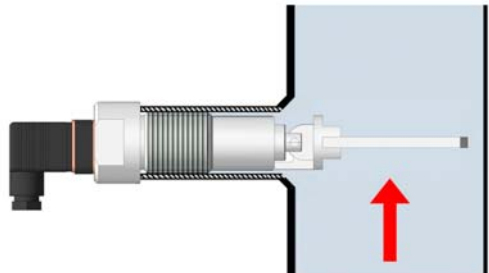
VH35 / AISI 316L



VH35 / PTFE



VH37 / AISI 316L



VH37 / PTFE
VH39 / PTFE

- VH35 Horizontal pipe
- VH37 vertical pipe with upwards flow, with spring
- VH39 vertical pipe with upwards flow, with magnetic spring

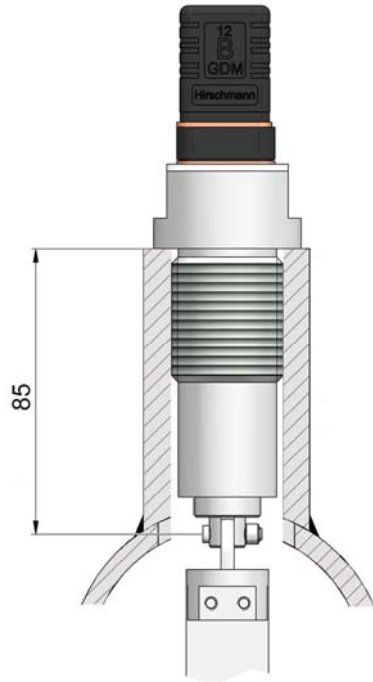
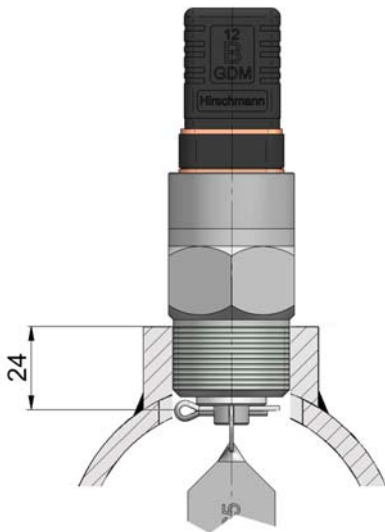
4 RECEPTION

The series VH flow switches are supplied conveniently packaged for their protection during transportation and storage, together with their instructions manual for installation and operation.

5 INSTALLATION

For VH35 model, install the flow switch in a horizontal pipe with the hanging paddle in vertical position and perpendicular to the flow direction. The center of the paddle-pin should be aligned with the inner diameter of the pipe. To achieve this position, the top of the threaded fitting should be at the following distances from the inner pipe diameter:

- 24 mm, if the switch is made of stainless steel (AISI 316L).
- 85 mm, if the switch is made of plastic (PTFE).



The paddle should be free to move without touching the pipe.

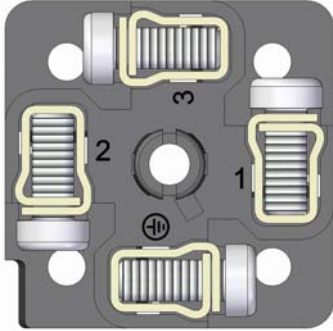
The flow switch will work with flow in both directions in a horizontal pipe.



NOTE: On request the flow switch can be supplied for mounting in a vertical pipe with upwards flow direction (models VH37 and VH39). In this case the paddle has a stop to avoid it from falling below the horizontal position, and the switching flow rate will be higher than the version for a horizontal pipe.

5.1 Electrical connection

For the electrical installation it is recommended to use multiple conductor cables, and not single cables, in order to guarantee the cable gland will stay watertight. The connector has a PG9 cable gland for cables with outer diameters between 4.5 mm and 7 mm. The numbering of the terminals is the following:



In the female connector:

- Terminal 1: NO Normal open contact
- Terminal 2: NC Normal close contact
- Terminal 3: Common terminal
- Earth terminal: Earth terminal internally grounded.

This numbering refers to the switch without flow.

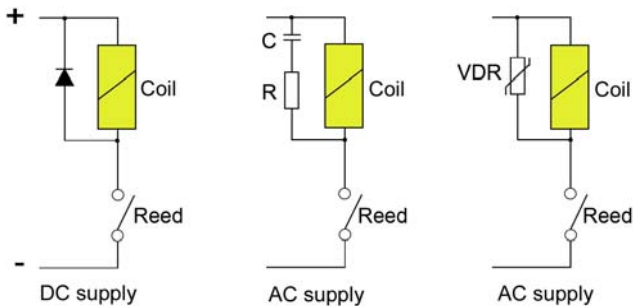
Make sure that the contact rating indicated on the label at the product and in page 7 of this manual, is not exceeded.

is not exceeded. If high loads are to be switched, use an auxiliary relay.

When using inductive loads, such as relays or solenoid valve coils, surge arresters should be installed to protect the reed contacts.

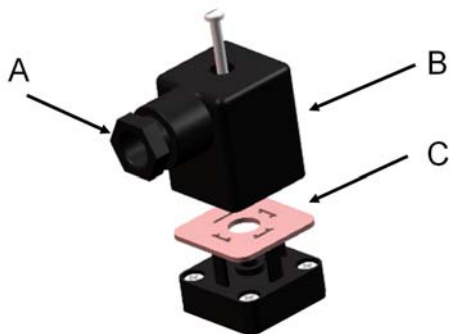
With a DC supply, a diode should be connected as shown.

For an AC supply, a RC circuit can be used as shown, although a varistor (VDR) is better and is easier to select the right value. The VDR should have a breakdown voltage greater than 1.5 times the rms voltage. The standard varistor ratings specify the rms working voltage for the varistor, for example a S05K25 varistor will be for 25 V_{rms} working and will have a breakdown voltage of 39 V at 1 mA.



The electrical installation should provide a fuse or circuit breaker to protect the reed switch from overloads.

When installing the connector, make sure that the cable gland (A) closes over the cable and that the connector (B) with the rubber seal (C) is well screwed down to maintain the IP65 rating.



6 MAINTENANCE

No special maintenance is required.

7 TECHNICAL CHARACTERISTICS

Mounting:	Horizontal pipe or vertical pipe with upwards flow
Fluid density:	No restrictions
Working temperature:	-40°C ... +125°C
Working pressure:	
Body in AISI 316L:	PN25 (others on request)
Body in PTFE:	PN10
Connections:	G1 (1" NPT on request)
Connector:	DIN 43650 A
Electrical characteristics of the reed sensor:	
Maximum switching power:	5 W
Maximum switching voltage:	120 VAC, 175 VDC
Maximum switching current:	0,18 AAC, 0,25 ADC
Hysteresis:	±5% of paddle travel
Ingress protection:	IP65

8 SAFETY INSTRUCTIONS

The series VH flowmeters are in conformity with all essential requirements of all EC directives applicable to them:

2014/68/EU	Pressure equipment directive (PED)
2014/30/EU	Electromagnetic compatibility directive (EMC)
2012/19/EU	Waste electric and electronic equipment (WEEE).
2011/65/EU	Restriction of the use of certain hazardous substances in electrical and electronic equipment (ROHS).



The declarations UE of conformity can be downloaded from the section “Download” of the Tecfluid S.A. website www.tecfluid.com

8.1 Pressure equipment directive

Devices of series VH, due to their size, are rated as Category I are not within the scope of the directive and therefore they have not the CE mark according to pressure directive. These devices are subject to applicable sound engineering practice (SEP).



This equipment is considered as being a pressure accessory and **NOT** a safety accessory as defined in the 2014/68/EU directive, Article 2, paragraph 4.

8.2 Certificate of conformity TR CU (EAC marking)

Tecfluid S.A. have subjected the series VH of flowmeters to a certification procedure according to the technical regulations of the Customs Union of the Eurasian Economic Union (EEU).

This Certificate is an official document confirming the quality of production with the standards on the territory of the Customs Union, particularly regarding safety requirements and electromagnetic compatibility.



9 ADDITIONAL INSTRUCTIONS FOR THE ATEX VERSION

Flow switches series VH can be considered simple apparatus according to IEC 60079-11 standard, and therefore they are not marked as ATEX.

9.1 Non-metallic parts



WARNING: POTENTIAL RISK OF ELECTROSTATIC CHARGE



Since the danger of ignition by electrostatic discharge when rubbing this protection can not be avoided, **the instrument must always be cleaned with a damp cloth.**

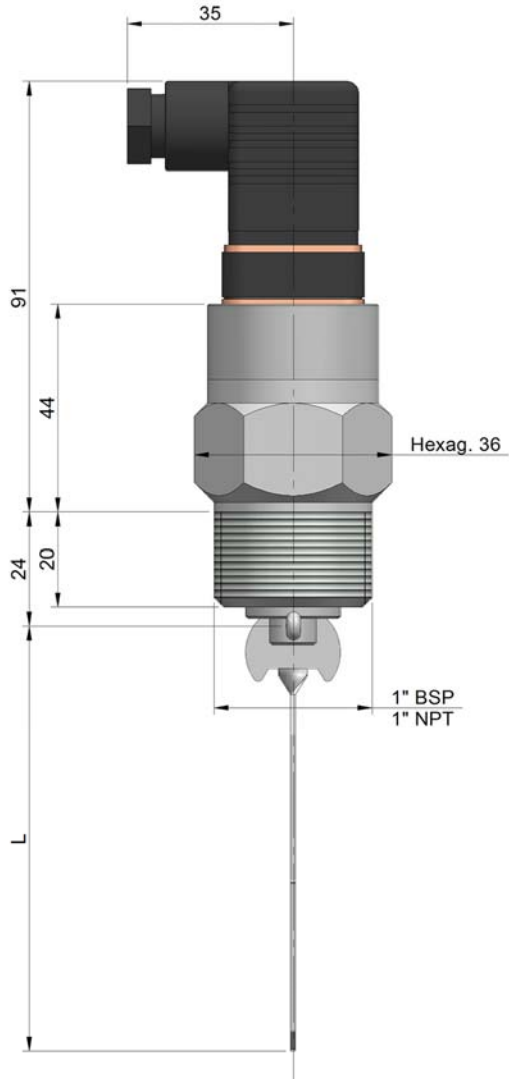
10 SWITCHING FLOW RATES

DN (mm)	NPS (inches)	Switching flow rate ⁽¹⁾ (m ³ /h)	L (mm)
32	1 ¼"	2	26
40	1 ½"	2,5	34
50	2"	3	40
65	2 ½"	4	55
80	3"	5	65
100	4"	10	90
125	5"	10	115
150	6"	12	140
200	8"	25	185
250	10"	30	230
300	12"	50	280
350	14"	60	330
400	16"	80	380
450	18"	100	415
500	20"	120	450

⁽¹⁾ Approximate flow rate

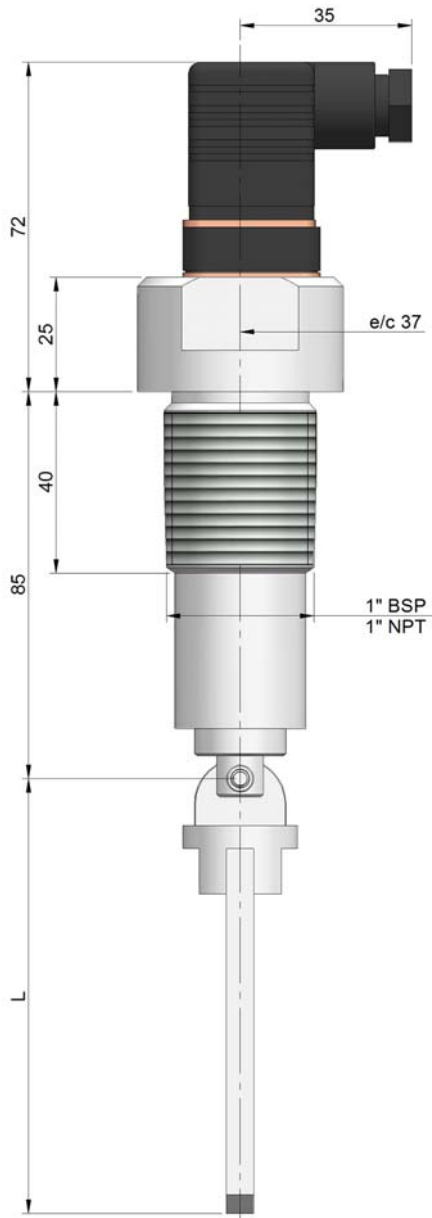
L: Paddle length

11 DIMENSIONS



Model VH35 AISI 316L

(dimensions in mm)



Model VH35 PTFE

(dimensions in mm)

WARRANTY

Tecfluid S.A. guarantees all its products for a period of 24 months from the date of sale, against any defect in materials, manufacture or operation. Excluded from this warranty are failures that can be attributed to improper use or application other than that specified in the order, handling by personnel not authorized by Tecfluid S.A., mishandling and mistreatment.

This warranty is limited to the replacement or repair of parts in which defects are observed that have not been caused by misuse, excluding liability for any other damage, or for the effects produced by the wear and tear of normal use of the equipment.

For all shipments of material for repair, a process is established that should be consulted on the web page www.tecfluid.com section of After Sales.

The products sent to our facilities must be properly packed, clean and completely free of liquids, grease or harmful substances.

The equipment to be repaired must be accompanied by the form to be filled in via web in the same After Sales section.

The warranty for repaired or replaced components applies for 6 months from the date of repair or replacement. However, the warranty period, as a minimum, will remain in force as long as the initial warranty period of the object of supply has not expired.

TRANSPORTATION

Shipments of Buyer's equipment to Seller's facilities for credit, repair or replacement shall always be made carriage prepaid unless otherwise agreed.

Seller accepts no responsibility for damage to equipment in transit.



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Quality Management System ISO 9001 certified by



Pressure Equipment Directive certified by



Lloyd's
Register

ATEX European Directive certified by



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The technical data described in this manual is subject to modification without notification if the technical innovations in the manufacturing processes so require.