

Flow switches Series AD/VH



Flow switch and indicator for liquids and gases

- Suitable for clear, opaque or turbid liquids (series AD & VH), and for gases (series AD)
 - Flow switching by means of magnetic coupling, watertight, no contact between process fluid and switching, indicator or transmitter systems
 - Suitable for installation in horizontal or vertical pipes
 - Robust construction
 - Scales available for H₂O, air, oil, etc. (series AD)
 - Flow rate (for liquids):
 - Series AD: 0.25 ... 270 l/min
 - Series VH: 2 ... 120 m³/h
 - Accuracy for series AD: ±5% f.s.
 - Connections:
 - Series AD: ¼" ... 2 ½" BSP / NPT
 - Series VH: G1 / 1" NPT, to be inserted on a DN32 ... DN500 pipe
 - Materials:
 - Series AD: EN 1.4404 (AISI 316L), aluminium, brass
 - Series VH: EN 1.4404 (AISI 316L), PTFE
 - Flow switching:
 - Series VH:
 - 1 reed switch
 - Series AD:
 - 1 or 2 reed switches
 - 1 or 2 inductive switches
- All switches for series AD are ATEX Ex ia certified
- Options for series AD:
 - Local flow indication
 - Electronic transmitter with 4-20 mA output for safe or hazardous area (Ex ia protection, ATEX certified). HART, MODBUS protocol available on request



Series AD

Working principle

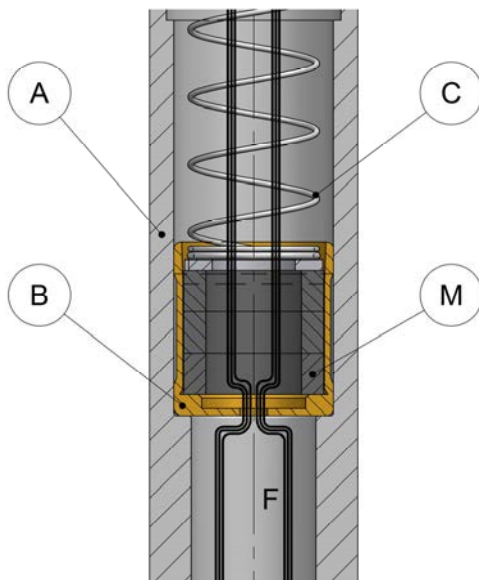
A spring **C** keeps a disk **B** in zero flow rate position. When the fluid flows through the disk at a specific speed, a force is made on the disk **B**, moving it to an equilibrium position.

The distance covered by **B** depends on:

- The force of the fluid flow **F**.
- The relationship between areas **A** & **B**.
- The force in opposition of the spring **C**.

The equilibrium between forces **F** and the one generated by **C** defines the position of the disk **B**, equivalent to flow rate.

The disk **B**, which contains a magnet **M**, acts over the switches and/or the local indicator.



Applications

- Machine or processes cooling
- Hydraulic and lubrication circuits
- Thermal oil circuits
- Gas flow control
- Mechanical fasteners cooling control

Models

- **AD15** flow switch with 1 ... 2 reed switches (mounted in an IP65 polyamide housing), full scale adjustable
- **ADI15** local flow indicator optionally with:
 - 1 ... 2 reed switches (mounted in an IP65 polyamide housing), full scale adjustable
 - 1 ... 2 inductive switches (mounted in the IP65 aluminium with polycarbonate cover indicator housing)
 - 4-20 mA transmitter

Technical data

- **Accuracy:** $\pm 5\%$ full scale
- **Scale range:** according to flow rate chart on page 4
- **Scales in l/h, l/min, l/s, m³/h, %, etc.**
- **Fluid temperature:** -20°C ... +100°C
- **Ambient temperature:** -20°C ... +80°C
- **Working pressure:** PN16 (others on request)
- **Connections:** 1/4" ... 2 1/2" BSP / NPT
- **Materials:**
 - Brass from 1/4" to 2"
 - Aluminium from 1 1/4" to 2 1/2"
 - EN 1.4404 (AISI 316L) on request
- **Vertical or horizontal mounting,** as per customer's request

Operation

- Vertical upwards flow (BD)
- Vertical downwards flow (DAB)
- Horizontal flow from left to right (ED)
- Horizontal flow from right to left (DES)

Limit switches and transmitters

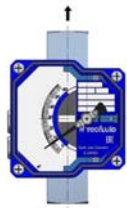
- **ADR:** 1 ... 2 adjustable reed switches
 - **M1-AMD1 ... 2:** 1 ... 2 adjustable inductive switches (+ relays on request)
 - **TH6 ... TH6H:** 4-20 mA transmitter, 2 wires. **HART protocol** for model TH6H
- All switches and transmitters are available with **ATEX Ex ia certification**. The inductive switches are also available with **ATEX / IECEx Ex ia certificate**
- **MT03A:** electronic converter. **MODBUS RTU RS485 protocol** optional



Mounting

Vertical upwards

Models AD15/BD
ADI15/BD



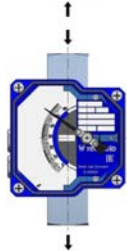
Horizontal / left-right

Models AD15/ED
ADI15/ED



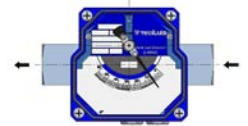
Vertical downwards

Models AD15/DAB
ADI15/DAB



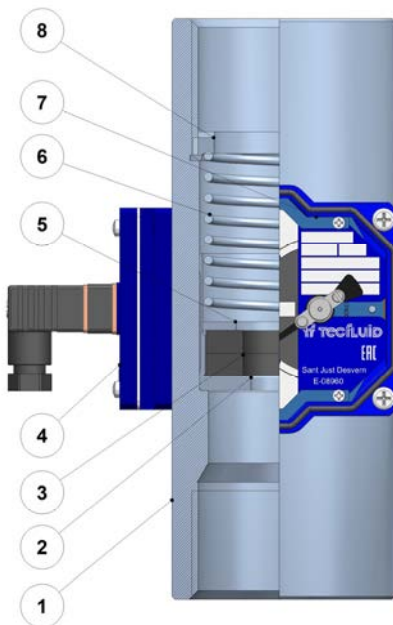
Horizontal / right-left

Models AD15/DES
ADI15/DES

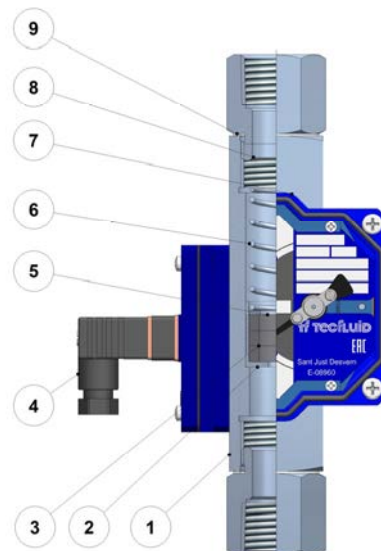


Materials

BSP (all sizes) / NPT (from 1 1/4")



NPT (up to 1")



N°	Description	Materials	
		BSP	NPT
1	Body	Brass / EN 1.4404 (AISI 316L) / Anodized aluminium *	
2	Disk	Brass / EN 1.4404 (AISI 316L) / Anodized aluminium *	
3	Magnet	Ferrite **	
4	Switch	Polycarbonate - PVC - NBR	
5	Washer	EN 1.4404 (AISI 316L)	
6	Spring	En 1.4310 (AISI 302)	
7	Housing	Polycarbonate - Anodized aluminium	
8	Screw	EN 1.4401 (AISI 316)	
9	Gasket	---	NBR ***

* Materials available for each size:

1/4" ... 1": EN 1.4404 (AISI 316L), brass

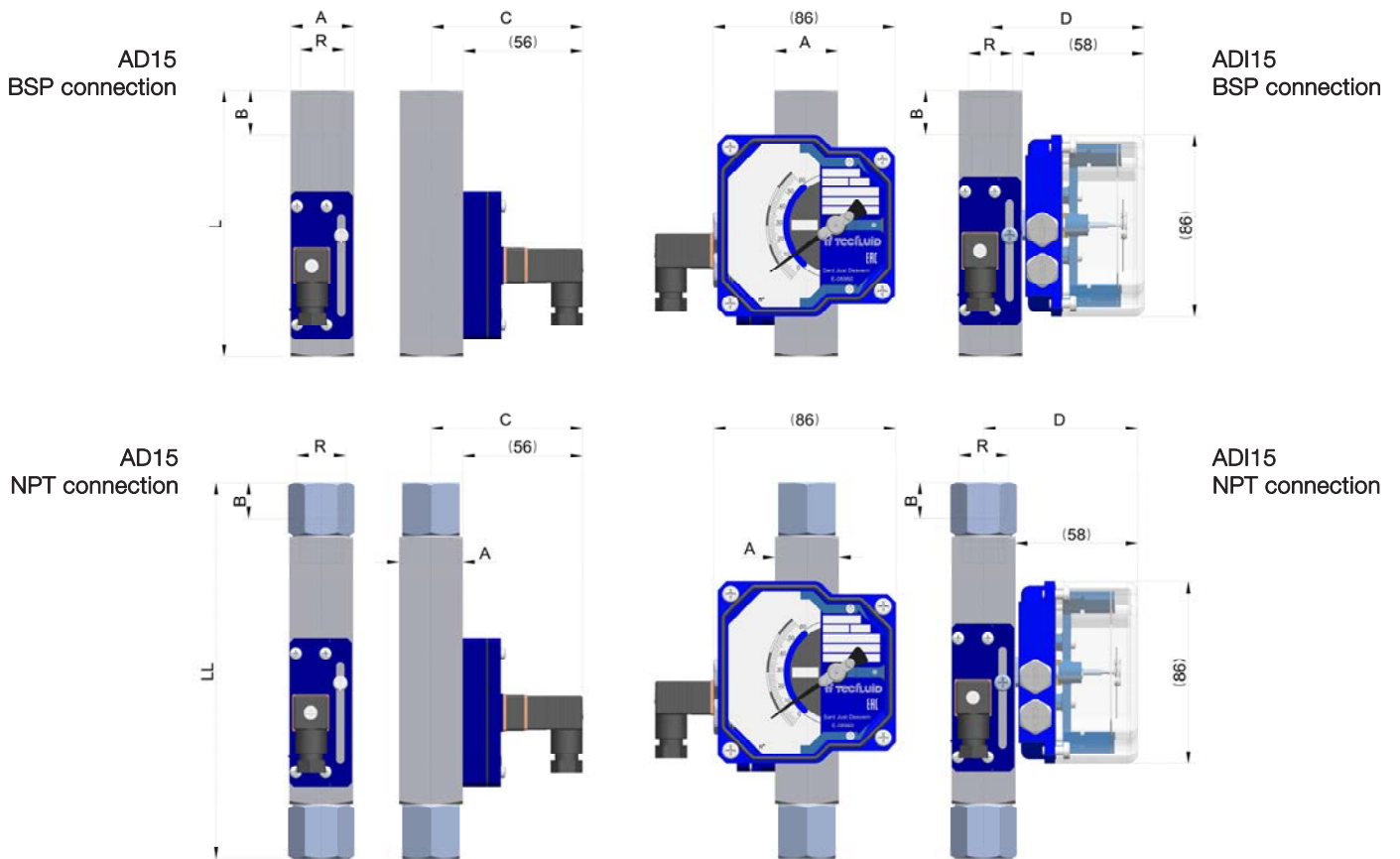
1 1/4" ... 2": EN 1.4404 (AISI 316L), brass, anodized aluminium

2 1/2": EN 1.4404 (AISI 316L), anodized aluminium

** magnet with plastic coating for applications with corrosive liquids on request

*** other materials on request

Dimensions



R"	A	B	C	D	L (BSP)	LL (NPT)	Weight (kg)
1/4"	30	14	71	73	140	140	0,9
1/2"	30	14	71	73	126	178	1,2
3/4"	35	21	73	75	126	188	1,6
1"	40	26	76	78	126	188	1,8
1 1/4"	50	27	81	83	160	160 *	2,4
1 1/2"	60	27	86	88	180	180 *	3,0
2"	Ø 80	37	96	98	200	200 *	3,2
2 1/2"	Ø 100	37	106	108	200	200 *	3,6

All dimensions in mm

* same design as for BSP

Flow ranges

R" (BSP / NPT)	Flow scales l/min H ₂ O
1/4"	0.25-1 0.5-2.5
1/2"	1-5 1.5-10 2-17
3/4"	5-30 6-40
1"	10-50
1 1/4"	15-70
1 1/2"	40-160
2"	70-220
2 1/2"	100-270

ADI15/AISI 316L with
local indication and
without switches



Equivalent scales for air at 1 bar abs 20°C in NI/min:
l/min H₂O x 8 (approx.)

Limit switches and transmitters

Adjustable limit switch ADR



Available for models AD15 ... ADI15

SPDT potential free reed switch. IP65 polyamide housing:

- /1A = 1 reed switch
- /2A = 2 reed switches

- Reed characteristics:
 - **ADR01:** for 1/4", 1/2", 3/4", 1": 0.25A 175VDC 5W
 - **ADR11:** for 1 1/4", 1 1/2", 2 1/2": 1A 250V 60VA
 - **ADR11M:** for 2": 1A 250V 60VA

Adjustable limit switch M1-AMD



Optional for model ADI15.

NAMUR (EN 60947-5-6) 3.5 mm slot type inductive detector activated by vane.

- M1-AMD1 ... 2: 1 ... 2 adjustable limit switches
- Nominal voltage: 8.2 V / Working voltage: 5 ... 25 V
- Ambient temperature: -25°C ... +100°C
- ATEX / IECEx certificate Ex ia IIC T6 Ga / Ex ia IIIC T⁺°C Da

Control relay (on request)

NAMUR (EN 60947-5-6) for 1 or 2 inductive detectors.

- Power supply: 20 ... 30 VDC
- Consumption: <1.3 W
- Relay output:
 - Vmax: 253 VAC / 2A // 40 VDC / 2A resistive load
- Ambient temperature: -20°C ... +60°C

Transmitter TH6



Optional for model ADI15.

- Power supply: 2-wire system, 12 ... 36 VDC
- Power consumption: max. 20 mA
- Analog output (4-20 mA):
 - Error: < 0,6% of the magnet position
 - Maximum load in 4-20 mA loop: 1.1 kΩ (with 36 VDC power supply)
- Ambient temperature: -25°C ... +80°C
- Transmitter connector: IP68 with cable gland M12x1,5
- Optional: ATEX certificate Ex ia IIC T6 ... T4 Ga / Ex ia IIIC T85°C Da with model TH6 Ex
- Optional: HART protocol with model TH6H



ADI15/AISI 316L with 1 ADR reed switch

Electronic converter

Model MT03A



- Electronic converter for flow applications
- Resistance and current inputs
- Programmable via USB cable by means of Tecfluid S.A. Winsmeter MT03 software or by means of keyboard and graphic display with intuitive menus
- Panel mounting with dimensions 96 x 96 mm DIN 43700
- Power supply: 100 ... 240 VAC 50 / 60 Hz
18 ... 36 VDC
- Full diagnosis. User selectable password protection
- 5 digits local flow rate indication and 8 digits totalizer and partial totalizer. Possibility of remote reset
- Programmable 4-20 mA analog output
- 2 x relay outputs programmable as flow rate alarms
- Mass flow rate can be measured programming the product density

- Ingress protection: IP50 front, IP30 back (Optional IP65 front with silicone cover)
- Ambient temperature: -20°C ... +60°C
- MODBUS RTU RS485 protocol on request



MT03A

Series VH

Working principle

A liquid flows inside a pipe fast enough to move a paddle, which at the same time moves a permanent magnet that acts over the reed switch. The magnet-reed switch system is isolated from the liquid.

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

Applications

- Hydraulic and heating-cooling circuits
- Chemical, petrochemical and pulp & paper industry
- Water treatment, power plants
- Swimming pools & fire protection systems

Models

- VH35 / AISI 316L ... PTFE horizontal pipe
- VH37 / AISI 316L BD vertical pipe with upwards flow, with spring
- VH39 / PTFE BD vertical pipe with upwards flow, with magnetic spring

Technical data

- **Flow detection** by means of oscillating paddle
- **SPDT potential free reed switch**, mounted in the body, not wetted by the liquid
- **Fluid temperature:** -40°C ... +125°C
- **Ambient temperature:** -40°C ... +125°C
- **Working pressure:**
 - EN 1.4404 body: PN25 (others on request)
 - PTFE body: PN10
- **Connections:** G1 (1" NPT on request)
- **Materials:** EN 1.4404 (AISI 316L), PTFE
Others on request
- **Ingress protection:** IP65, with DIN 43 650-A connector
- **Mounting:** horizontal or vertical upwards pipe

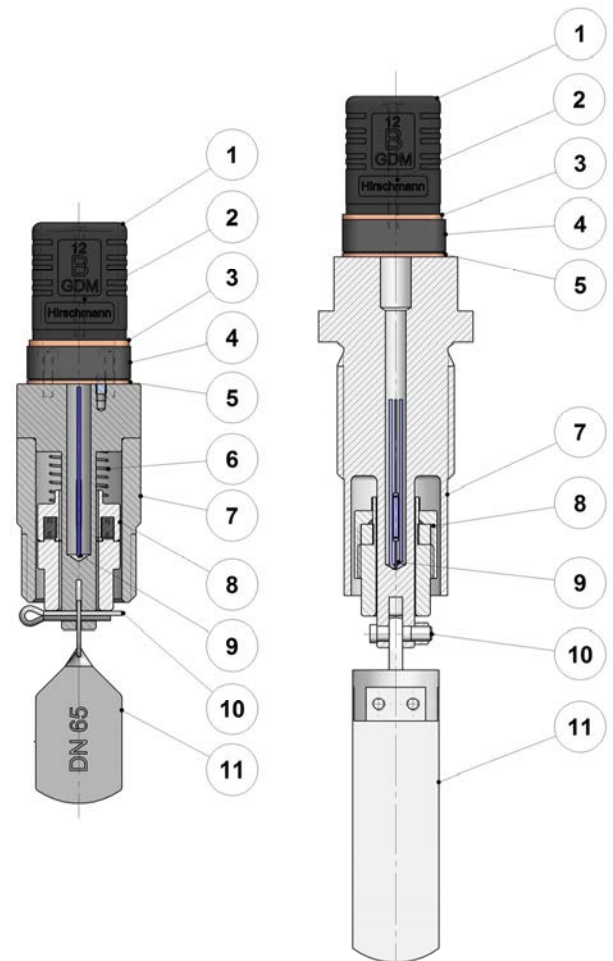
Operation

- **Vertical upwards flow (BD)**
- **Horizontal flow from left to right or from right to left**

Limit switches

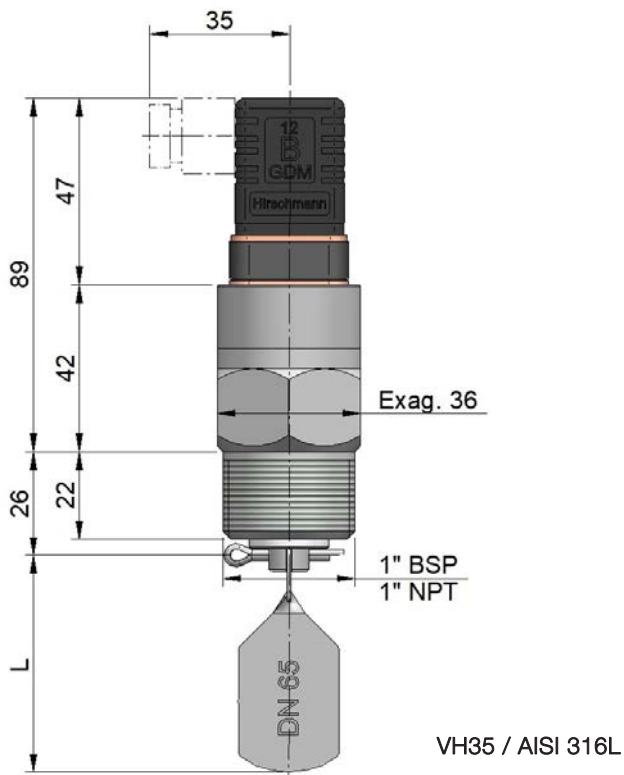
- **Reed switch:** potential free switch.
Contact rating:
 - Maximum switching power: 5W
 - Maximum switching voltage: 175 VDC
 - Maximum switching current: 0.25 A
- Suitable for ATEX hazardous area "Simple apparatus"

Materials



N°	Description	Materials	
		VH / AISI 316L	VH / PTFE
1	Connector	Polyamide	
2	Screw	EN 1.4301 (AISI 304)	
3	Gasket	NBR	
4	Connector base	Polyamide	
5	Gasket	NBR	
6	Spring	EN 1.4310 (AISI 302)	---
7	Body	EN 1.4404 (AISI 316L)	PTFE
8	Magnet holder	PVDF	PTFE
9	Reed switch	Glass	
10	Pin	EN 1.4401 (AISI 316)	PTFE
11	Paddle	EN 1.4404 (AISI 316L)	PTFE

Dimensions



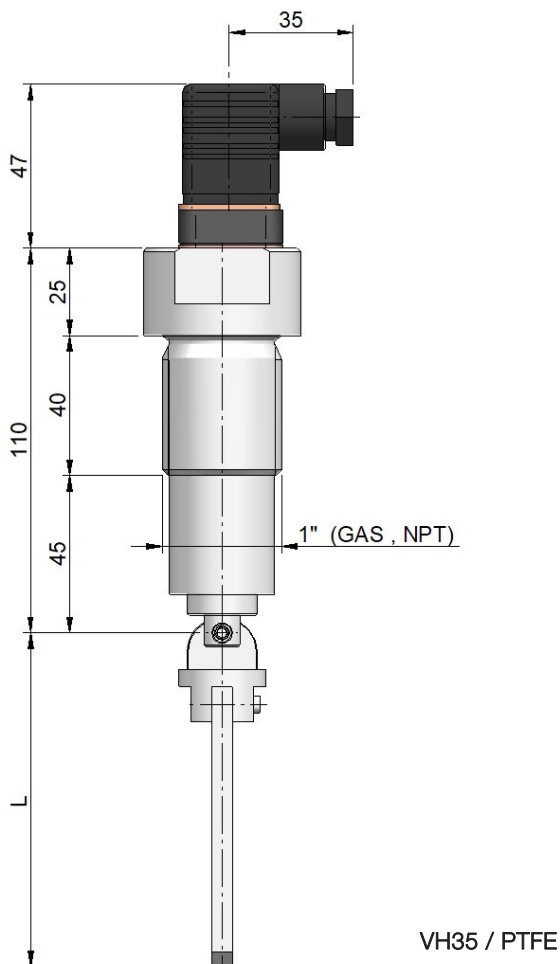
Switching flow rates

DN	NPS	Switching flow rate ⁽¹⁾	
		m ³ /h	L
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

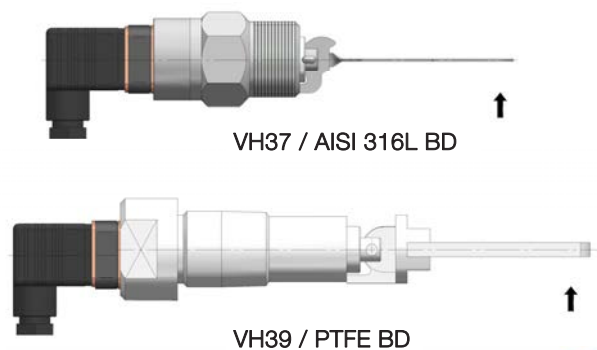
⁽¹⁾ Approximate flow rates

Mounting

Horizontal / left-right or right-left:
model VH35



Vertical upwards:
model VH37 / 39 BD



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