

Operating manual (Translation)

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Flow Switches

Series VH... / VK...



Please keep this operating manual for future reference.

If the device is resold, please provide the operating manual along with it.

Flow switches for insertion installation

Threaded adapter with trimmable paddle



Technical data	VHS06	VK306
Switching function	Contact → closes at increasing flow → opens at decreasing flow Reversing possible	
Pressure rating	PN 25	PN 10
Temperature ranges		
Medium	-25...110 °C	-25...100 °C
Ambient	-25...80 °C	-25...70 °C
Electrical data		
Electrical connection	Plug connector DIN EN 175301-803-A incl. cable socket	1.5 m PVC jacket cable
Switching current	Max. 1 A	
Switching voltage	Max. 230 VAC, 48 VDC	
Rating	Max. 26 VA, 20 W	
Degree of protection EN 60529	IP65	
Protection class EN 60730-1	Class II	
Approvals*		



* Only for flow switches with plastic paddle

Advantages

- Universal Flow switches for DN 20...200
- Fully adjustable for pipe size and setpoint by trimming the paddle
- Glass fibre reinforced plastic paddle or stainless steel paddle for higher flow rates
- Threaded adapters for tees or for direct insertion into pipes
- Easy installation due to union nut

Options	
For type	See oder code
VHS06	→ Plug connector DIN EN 175301-803-A incl.cable socket with two LED for switching voltages 24 V...230 V AC/DC ±20 %, ambient temperature -20...70 °C → or 4-pin-sensor plug M12 x 1
For type	On request
VK306 with plastic paddle	→ Recognized component ETL according to UL & CSA standards

VHS06 / VK306 with plastic paddle, installation into pipe tees according to EN 10242

Paddle to be trimmed to						
	Paddle mark	9	15	20	30	40
	Installation length L ₁ [mm]	40	46	51	61	71
Setpoints* / Max. flow rate [m³/h]						
DN 20	Increasing flow ON**	1.1				
	Decreasing flow OFF	0.9				
	Max. flow rate	4				
DN 25	Increasing flow ON**	1.7	1,3			
	Decreasing flow OFF	1.5	1.1			
	Max. flow rate	8.5	5			
DN 32	Increasing flow ON**	2.9	2.2	1.9		
	Decreasing flow OFF	2.6	1.9	1.6		
	Max. flow rate	15	10	8		
DN 40	Increasing flow ON**	4.2	3.2	2.8	2.1	
	Decreasing flow OFF	3.8	2.8	2.4	1.8	
	Max. flow rate	25	18	14	10	
DN 50	Increasing flow ON**	6.5	4.9	4.4	3.3	2.7
	Decreasing flow OFF	6	4.5	4	3	2.4
	Max. flow rate	41	29	24	17	13

VHS06 / VK306 with plastic paddle, installation by welded socket according to EN 10241, G½ female, length 15 mm

Paddle to be trimmed to									
	Paddle mark	15	20	30	40	50	60	70	80
	Installation length L ₁ [mm]	46	51	61	71	81	91	101	111
Setpoints* / Max. flow rate [m³/h]									
DN 65	Increasing flow ON**	8.8	7.4	5.6	4.5	3.8	3.2		
	Decreasing flow OFF	8.5	7	5.2	4.2	3.4	3		
	Max. flow rate	50	45	34	27	22	18		
DN 80	Increasing flow ON**	13.8	11.7	9.2	7.5	6.5	5.1		
	Decreasing flow OFF	11.3	9.6	7.7	6.3	5.3	4.7		
	Max. flow rate	80	65	50	40	33	28		
DN 100	Increasing flow ON**		18.8	14.6	12.3	10.2	8	6.9	6.2
	Decreasing flow OFF		16.3	12	10	8	7.1	6.3	5.9
	Max. flow rate		110	80	65	55	50	40	36
DN 150	Increasing flow ON**				27	22.8	19.5	18	15.7
	Decreasing flow OFF				25	19.8	17.8	16	14.3
	Max. flow rate				150	130	110	100	90
DN 200	Increasing flow ON**					45	38	33.5	30
	Decreasing flow OFF					43.5	36	32	29
	Max. flow rate					230	200	175	160

* Water, 20 °C, horizontal pipe, tolerance ±15 %

** Typical value

VHS06 / VK306 with stainless steel paddle, installation into pipe tees according to EN 10242

Paddle to be trimmed to					
	Paddle mark	15	20	30	40
	Installation length L ₁ [mm]	46	51	61	71
Setpoints* / Max. flow rate [m³/h]					
DN 25	Increasing flow ON**	1,2	1		
	Decreasing flow OFF	1	0,9		
	Max. flow rate	10	6		
DN 32	Increasing flow ON**	2	1,7		
	Decreasing flow OFF	1,7	1,5		
	Max. flow rate	20	15		
DN 40	Increasing flow ON**	3,3	2,7	2	
	Decreasing flow OFF	3	2,5	1,8	
	Max. flow rate	34	26	18	
DN 50	Increasing flow ON**	4,8	4	3,2	2,6
	Decreasing flow OFF	4,6	3,8	2,9	2,4
	Max. flow rate	55	45	32	24

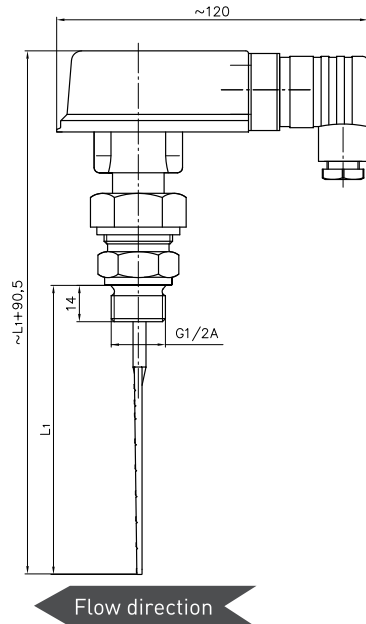
VHS06 / VK306 with stainless steel paddle, installation by welded socket according to EN 10241, G½ female, length 15 mm

Paddle to be trimmed to									
	Paddle mark	15	20	30	40	50	60	70	80
	Installation length L ₁ [mm]	46	51	61	71	81	91	101	111
Setpoints* / Max. flow rate [m³/h]									
DN 80	Increasing flow ON**	11,7	10	7,7	6,4	5,3	4,6		
	Decreasing flow OFF	11,4	9,6	7,5	6	4,9	4,2		
	Max. flow rate	150	125	95	75	60	50		
DN 100	Increasing flow ON**		16	12,4	10,3	8,7	7,7	6,7	6,1
	Decreasing flow OFF		15,9	11,9	9,8	8,1	7,1	6,3	5,6
	Max. flow rate		200	150	120	105	90	75	70
DN 150	Increasing flow ON**				24	20,3	18	16,3	14,7
	Decreasing flow OFF				22,7	19	17,3	15,3	13,8
	Max. flow rate				290	250	210	190	170
DN 200	Increasing flow ON**					41	35,7	31,7	26,7
	Decreasing flow OFF					38,7	34	29,7	23,3
	Max. flow rate					450	390	350	310

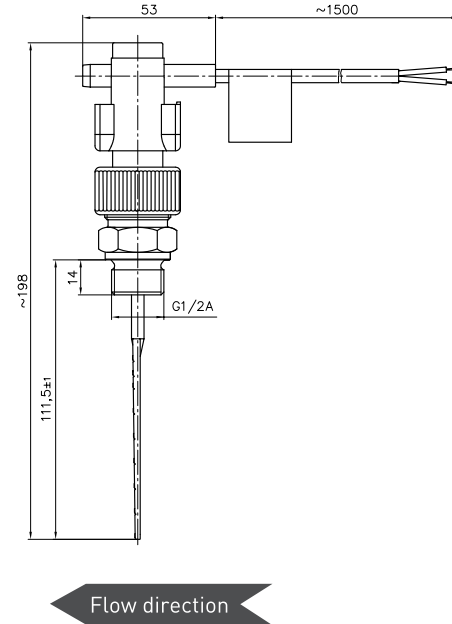
* Water, 20 °C, horizontal pipe, tolerance ±15 %

** Typical value

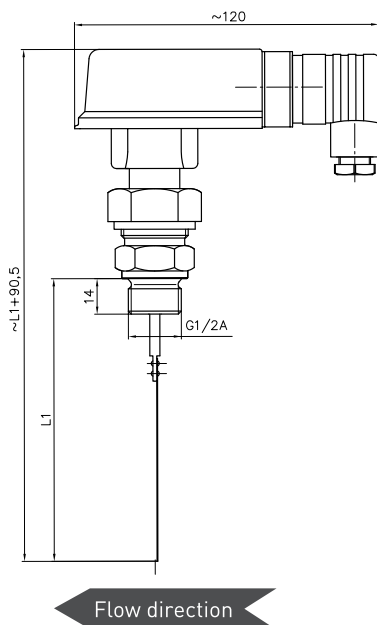
VHS06 with plastic paddle



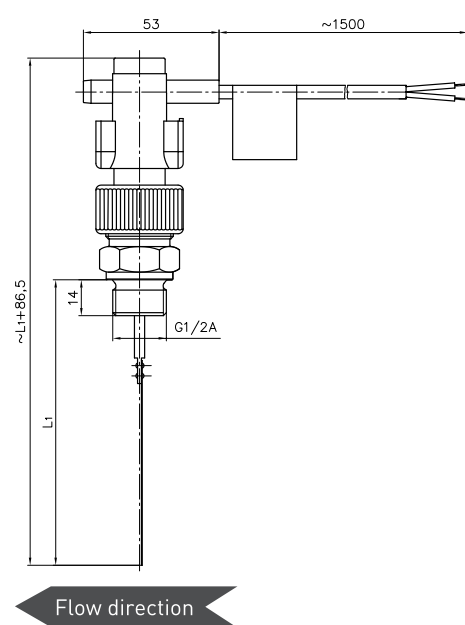
VK306 with plastic paddle



VHS06 with stainless steel paddle



VK306 with stainless steel paddle



Materials in contact with fluid

Type	VHS06	VK306
Body	Brass CW614N	Noryl PPO GFN3
Paddle	Plastic paddle: Noryl PPO GFN3 / stainless steel Stainless steel paddle: Stainless steel 1.4310 / brass	
Process connection	Brass CW614N	
Magnet	Hard ferrite	
O-ring	NBR	

Order code	Example → VHS06M2	P	171R21
Type			
VHS06			
Plug connector incl. cable socket (standard)	VHS06M2		171R21
Plug connector incl. cable socket with LED (option)	VHS06M2		191R21
4-pin-sensor plug M12 x 1 (option)	VHS06M2		181R21
VK306			
1.5 m PVC jacket cable	VK306M2		10PR21
Paddle			
Plastic		P	
Stainless steel		5	


Accessories for VHS06 / VK306	Order code	
Welding socket according to EN 10241 G½ female thread, length 15 mm Steel S 235 JR	XVH1470	

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0 About this operating manual

- The operating manual is aimed at specialists and semi-skilled personnel.
- Before each step, read through the relevant advice carefully and keep to the specified order.
- Thoroughly read and understand the information in the section "Safety instructions".

Hazard signs and other symbols used:



DANGER! Risk of death due to electric current!

This sign indicates dangers which could lead to serious health defects or to death.



CAUTION! Risk of injury!

This sign indicates dangers that cause personal injuries that can lead to health defects or cause considerable damage to property.



CAUTION! Risk of injury in the case of excessive pressure!

This sign indicates dangers which could arise from excessive pressure in a piece of equipment.



CAUTION! Material damage!

This sign indicates actions which could lead to possible damage to material or environmental damage.



ADHERE TO OPERATING MANUAL!



Pay attention to and comply with information that is marked with this symbol.



Follow the specified instructions and steps.
Adhere to the given order.



NOTICE!

This symbol indicates important notices, tips or information.



Check the specified points or notices.



Reference to another section, document or source.

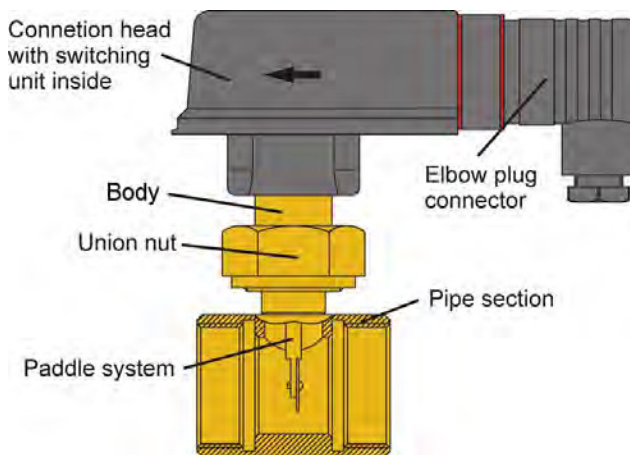


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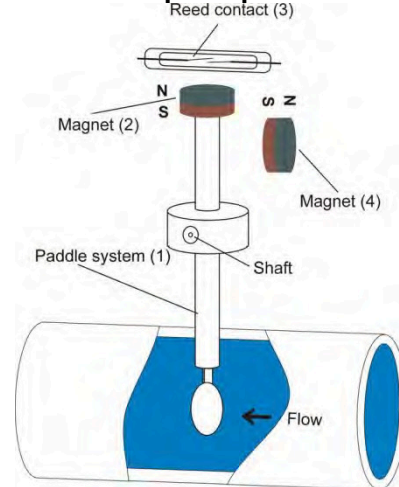
1 Device description

SIKA flow switches are designed for minimum or maximum monitoring of liquid flows.

Components Flow Switch:



Functional principle:



The flow switch consists of a paddle system (1) which has a permanent magnet (2) located at its upper end. A reed contact (3) is positioned outside the flow above this magnet. A second, magnet (4) with opposite polarity is used to create a reset force.

The paddle system is moved once it comes into contact with the flow which is to be monitored. The magnet (2) changes its position in relation to the reed contact (3). The contact opens/closes depending on the contact type (→ § 6.1).

As soon as the flow is interrupted, the paddle returns to its original position and the reed contact opens/closes depending on the contact type (→ § 6.1).

1.1 Intended use

SIKA flow switches are designed for minimum or maximum monitoring of liquid flows.



Warning! No safety component!

The flow switches of the series VH... / VK... are not safety components in accordance with Directive 2006/42/EC (Machine Directive).

⚠ Never use the VH... / VK... as a safety component.

The operational safety of the supplied equipment is only guaranteed if it is operated according to its intended use (flow monitoring of liquids). The specified limit values (→ § 9 "Technical data") should never be exceeded.

It is your responsibility to select a technology which is suitable for your specific application, to install it correctly, to carry out tests and to maintain all the components.

Various device versions are manufactured. The respective type plate displays the version of each device.

1.1.1 Flow switch version VH...X

The Flow switches for application in explosion-hazardous area have an "X" at the end of the article number (→ type plate). They have been subjected to an ignition hazard assessment according to DIN EN 13463-1: 2002 and correction 1: 2003 and do not have potential sources of ignition. They are, therefore, not subject to directive 2014/34/EU.

The switching unit is a simple electrical device for connection to a certified intrinsically safe circuit in accordance with DIN EN 60079-11: 2007. The effective internal inductances and capacities are negligibly small.

The flow switch series VH...X are designed for application in explosive atmospheres. The ignition energy of the explosive atmosphere should not fall below 60 µJ.

Please observe the following separation of zones:

The design of the flow switch VH...X allows a potentially explosive atmosphere (zone 0) to exist permanently, over a longer period or frequently within the pipework in which the paddle is located.

In normal operation, there should only be an occasional potentially explosive atmosphere (zone 1) outside the pipework where the flow switch connection is located. A manufacturer's declaration is available.

1.1.2 Reed contact - Switching of inductive or capacitive loads



CAUTION! Destruction or damage of reed contact!

Take notice of the max. contact loads mentioned on the specification plate!

The max. contact loads mentioned on the type plate (switching voltage, switching current and switching capacity) refer to pure ohmic loads and may not be exceeded under any circumstances.

High voltage and current peaks can occur, particularly when switching inductive or capacitive loads (e.g. relay coil, capacitors). Even if the overload is brief, this can destroy (welding the contacts) or damage (reduced lifespan) the reed contact.



Only use protection methods which be appropriate and checked.



Protection method when electrical connection of reed contacts:

The following protective circuits are basically possible: current limiting resistors, RC circuits, freewheeling diodes, suppression diodes, varistors or a combination of these.

Please verify the effectiveness of the chosen protection method in accordance with the specific loads involved.

1.2 Exclusion of liability

We accept no liability for any damage or malfunctions resulting from incorrect installation, in-appropriate use of the device or failure to follow the instructions in this operating manual.

2 Safety instructions



Always read these operating instructions carefully prior to installing the VH... / VK... . Always adhere to the instructions contained herein, especially the safety instructions, otherwise there is a potential risk of personal injury and damage to instruments and plants.

Even though SIKA provides assistance through personal consultation or the respective literature, it is the responsibility of the customers to determine the suitability of the product for the specific application.

The flow switches are state-of-the-art devices. This concerns switching point accuracy, functioning and safe operation of the device

However, professional and safety conscious conduct of the operator is required to ensure safe operation.

2.1 Qualified personnel

- ⚠ The personnel entrusted with installing, operating and maintaining the flow switches have to be suitably qualified; the required knowledge can be gained via training courses or appropriate on-the-job instruction. The personnel have to be familiar with the contents of these instructions, which have to be available to them at all times.
- ⚠ The electrical connection should only be carried out by a fully qualified electrician.

2.2 Special safety instructions

- ⚠ All work has to be carried out in accordance with existing national regulations on accident prevention and safety at work and with any internal regulations of the operator, even if they are not specified in these instructions.
- ⚠ To avoid damages to the flow switch and the monitored system, only use SIKA flow switches for minimum or maximum monitoring of the flow of liquids.
- ⚠ Always follow and adhere to the flow switch installation instructions.
- ⚠ Never operate the flow switch in systems which have a greater flow rate than the specified max. flow rate (→ § 9.1). Otherwise it will cause irreparable damage to the flow switch.
- ⚠ Prior to flow switch installation, ensure that all the materials of the flow switch are chemically and mechanically-resistant to the medium which is to be monitored and to all external factors.
- ⚠ Ensure that the medium is free from magnetic particles.
- ⚠ Suitable measures should be taken to prevent the medium from freezing.
If the flow switch is to be used in ambient temperatures of $<4\text{ }^{\circ}\text{C}$, do not carry out any operation beforehand with pure water, e.g. a test run. Residual water in the flow switch can result in frost damage.
- ⚠ No greases, oils etc. should be used during the installation of the VK... devices due to the material resistance.
- ⚠ Ensure that the max. specified operating pressure is not exceeded.
- ⚠ Never remove a flow switch or its body from a pipe system under pressure.

- ⚠ If the medium which is to be monitored is very hot, the flow switches or their connection fittings will also become very hot. In this case, neither touch the flow switch nor place any heat-sensitive objects in its vicinity.
- ⚠ Protect the flow switch against external magnetic fields in the immediate vicinity, since these can impair device functioning.
- ⚠ The technical data of special versions (customised versions) can deviate from the details in these instructions. Please observe the details on the type plate.
- ⚠ **Caution: Danger of death due to high voltages!**
Always de-energize the system before connecting the connector cable.
- ⚠ It is prohibited to remove or make type plates or any other information attached to the equipment indecipherable, otherwise all warranties and the responsibility of the manufacturer no longer apply.

2.3 Additional information for flow switch version VH...X

- ⚠ The flow switch should only come into contact with media with a minimum ignition temperature of >135 °C and ignition energy of >60μJ.
- ⚠ When installing and before starting-up, it is to be guaranteed that the mechanical process connections are technically tight.
- ⚠ Always consider the impermeability of the screwing elements for the zone allocation. Depending on the operating conditions, it may be necessary to regularly check the impermeability of the screwing elements.

3 Material specifications of wetted components

Type	VH...M-1-1-1 VH...M-1-1-C	VH...M-1-1-1X	VH...M-3-3-3	VH...M-3-3-3X	VH...M-P-1-1 VH...M-P-1-C	VK...M-P-P-1 VK...M-P-P-C VK...M-P-P-K
Body	2.0401	2.0401	1.4571	1.4571	2.0401	PPO (NORYL GFN3)
Paddle system	2.0401	2.0401	1.4571	1.4571	PPO *4 (NORYL GFN3)	PPO *4 (NORYL GFN3)
Round head rivet	2.0321	2.0321	1.4303	1.4303	-----	-----
Bushings	PPO (NORYL GFN3)	1.4571	PVDF	1.4571	PPO (NORYL GFN3)	PPO (NORYL GFN3)
Axle	1.4571	1.4571	1.4571	1.4571	1.4571	1.4571 / PPO
Pipe section *1	2.0402 (VH...1) Copper (VH...C)	2.0402	1.4571	1.4571	2.0402 (VH...1) Copper(VH...C)	2.0402 (VK...1) Copper (VK...C) PVC (VK...K)
Threaded adapter *2	2.0402	2.0402	1.4571	1.4571	2.0402	1.4571
Screw-in insert *3	2.0401	2.0401	1.4571	1.4571	2.0401	1.4571
Seal	NBR	NBR	NBR	NBR	NBR	NBR
V Seal	-----	-----	-----	-----	EPDM	EPDM / PPO
Magnet	Hard ferrite	Hard ferrite	Hard ferrite	Hard ferrite	Hard ferrite	Hard ferrite

*1) only for flow switch with pipe section

*2) only for flow switch for direct installation, soldering or welding connection

*3) only for flow switch for direct installation, screw connection

*4) Type VHS06M - P ... (Trimmable paddle) has a stainless steel sleeve (1.4571)

4 Flow switch installation

CAUTION! Material damage!



When soldering the copper pipe fitting (→ § 4.2) or the threaded nipple (→ § 4.3), the flow switch (body with paddle mechanism) and the O-ring must be dismantled. Overheating during soldering will damage these components and impair their operation.

✚ Remove the flow switch and the O-ring before you start soldering.

4.1 General installation instructions

- ✚ When choosing the installation site, ensure that the specified limit values (→ § 9 "Technical data") are not exceeded.
- ✚ Select suitable measures to prevent the medium from freezing.
If the flow switch is to be used in ambient temperatures of $<4^{\circ}\text{C}$, do not carry out any operation beforehand with pure water, e.g. a test run. Residual water in the flow switch can result in frost damage.
- ✚ Firstly, clean the pipe system in which the flow switch is to be installed and remove any magnetic particles, e.g. welding residue.
- ✚ The straight in- and outlet pipe (in front of and behind the flow switch) has to be at least 5 x DN.
- ✚ The nominal installation position of the flow switch is an "upright standing position" in horizontal pipework.
- ✚ The switches should only be installed in a vertical position, deviation max. 45° (→ Fig. 1).
- ✚ Please contact the manufacturer if other installation positions are desired.
- ✚ Please make sure that there are no external magnetic fields in the immediate vicinity of the flow switch, since these can impair device functioning (→ Fig. 2a).
- ✚ There is an arrow on the flow switch. Ensure that this arrow is parallel with the pipe shaft and is facing in the direction of flow during installation (→ Fig. 2a).
- ✚ The brass and stainless steel union nuts $\frac{3}{4}$ " BSP (version VH...) have a tightening torque of 25...30 Nm.
- ✚ When tightening the union nuts, hold the pipe section against the surface provided (→ Fig. 2b).
- ✚ The plastic union nuts (version VK...) have a tightening torque of 7...8 Nm.

Additional information for flow switch version VH...X

- ✚ Please observe the specified limit values when choosing the installation site (→ § 9 "Technical data").

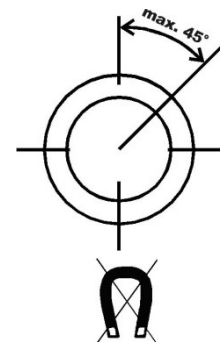


Fig. 1



Fig. 2a



Fig. 2b

- ✚ When installing and before starting-up, it is to be guaranteed that the mechanical process connections are technically tight.
- ✚ Always consider the impermeability of the screwing elements for the zone allocation. Depending on the operating conditions, it may be necessary to regularly check the impermeability of the screwing elements.

4.2 Flow switch with pipe section

- ✚ Install the flow switch pipe section just like a valve in the existing pipe.
- ✚ Sealing of the brass or stainless steel pipe sections has to be carried out with either thread sealants (Teflon tape, surface coating, etc.) or via sealing rings on the face of the tube section.
- ✚ Flow switches optionally equipped with a copper tube section (→ Fig. 5) have to be soldered to the pipe. The flow switch (body with paddle system) and the o-ring have to be disassembled from the tube section.
- ✚ With version ...MKU seal the PVC tube section (→ Fig. 6) in the pipe using suitable adhesive joints.

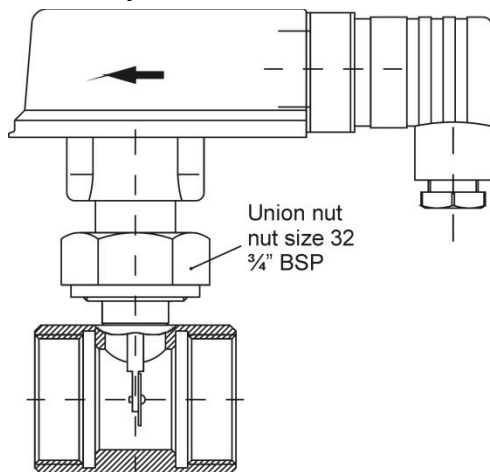


Fig. 5

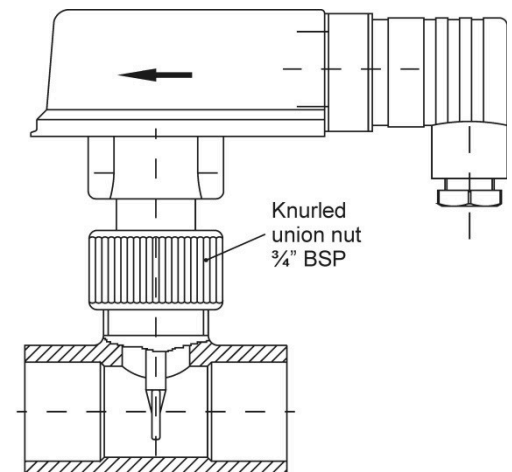
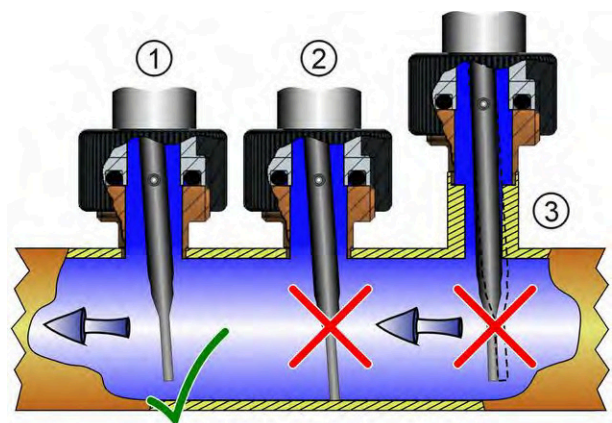


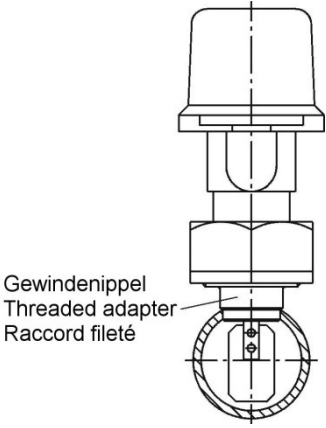
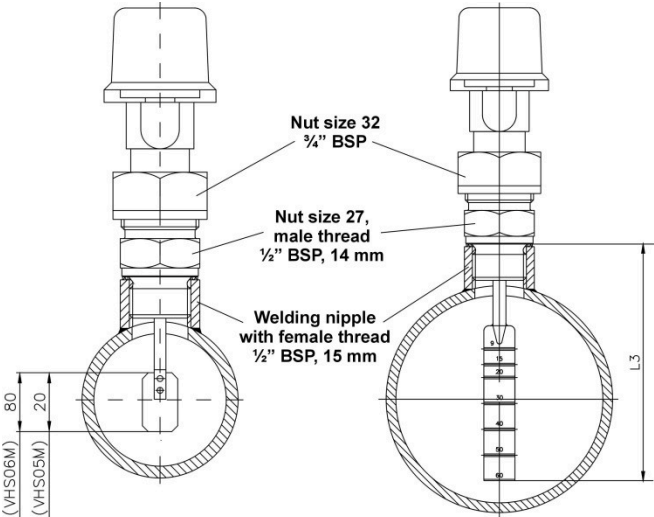
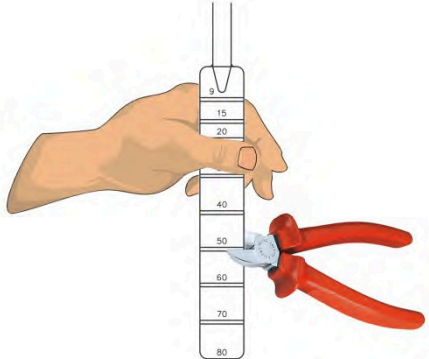
Fig. 6

4.3 Flow switch for direct installation

- ✚ During flow switch installation, ensure that the paddle does not touch the wall of the pipe ② and can move freely ①
- ✚ Ensure that the paddle rod does not bear against the inside of the dome ③.
- ✚ Prior to soldering (brass) or welding (stainless steel) the threaded nipple of the flow switch V- -01M..., always disassemble the flow switch and the O ring to prevent overheating.



➡ Carry out installation of your device type as described in the table below.

Flow switch type	Installation type and instructions
<p>V- -01M...</p>  <p>Gewindenippel Threaded adapter Raccord fileté</p> <p>Fig. 3</p>	<p>Installation with the help of brass (soldering) threaded nipples or stainless steel (welding) threaded nipples including O ring.</p>
<p>V- -05M... V- -06M... up to DN 50 VHS06M - P... V- -07M... up to DN 50</p>  <p>Nut size 32 1/2" BSP</p> <p>Nut size 27, male thread 1/2" BSP, 14 mm</p> <p>Welding nipple with female thread 1/2" BSP, 15 mm</p> <p>80 20 L3</p> <p>(VHS06M) (VHS05M)</p> <p>Fig. 4</p> <p>V- -06M... from DN 50 V- -07M... from DN 50</p>	<p>Installation in sockets with a 1/2" BSP female thread</p> <p>Caution: Please observe the installation height dimensions.</p> <p>VHS06M - P... (Trimable paddle)</p> <p>Important: In order to shorten the paddle to the required length, use a side cutter. When cutting, hold the paddle tight above the cut surface</p>  <p>Installation in sockets with a 1/2" BSP female thread:</p> <ul style="list-style-type: none"> - horizontal pipes (switch upright) - vertical pipes. <p>Caution: Always observe the installation height dimensions</p>

5 Electrical connection

5.1 General electrical connection information



DANGER! Risk of death due to electric current!

The electrical connection of the VH... / VK... should only be carried out by a fully qualified electrician.

✚ Always de-energize the system before connecting the wires of the mains cable.



CAUTION! Destruction or damage of reed contact!

The max. contact loads mentioned on the type plate refer to pure ohmic loads and may not be exceeded under any circumstances.

✚ Pay attention to sect. 1.1.2 Reed contact - Switching of inductive or capacitive loads.

Additional information for flow switch version VH...X

- ✚ The flow switch version VH...X can be connected as a simple electrical device to a certified intrinsically safe circuit.
- ✚ The flow switch version VH...X is equipped with either an elbow plug connector EN 175301-803-A or a permanent connecting cable.
- ✚ To prevent electrostatic charging the devices have to be connected to the equipotential bonding via the elbow plug connector or the fixed connecting cable.

5.2 Plug connector EN 175301-803-A

- ✚ Loosen the central screw ⑥ M3x35 and disconnect the cable socket ② from the connector ① (→ Fig. 7). Pull the central screw ⑥ out of the cable socket ②.
- ✚ Open the core ⑧ of the cable socket ② with a screwdriver or similar tool (→ Fig. 8).
- ✚ Loosen the screwed cable gland ⑤ M16x1,5 (→ Fig. 9).

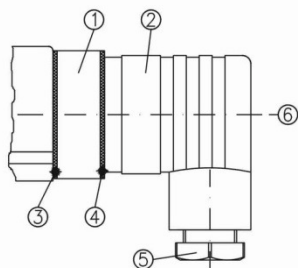


Fig. 7

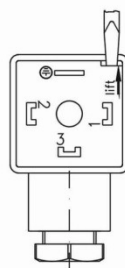


Fig. 8

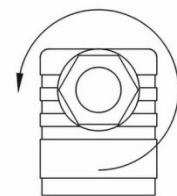


Fig. 9

- Insert the supply cable through the screwed cable gland ⑤, the pressure ring ⑩ and the rubber insert ⑨ into the cable socket ② (→ Fig. 10).
- Connect the wires as displayed in the connection diagram (→ Fig. 13).
- Press the core ⑧ into the cable socket ② until it locks into place.
- Put the central screw ⑥ in the cable socket ② and tighten the screwed cable gland ⑤ M16x1,5 (→ Fig. 11).
- Plug the cable socket ② on the connector ① and tighten the central screw ⑥ (→ Fig. 12).

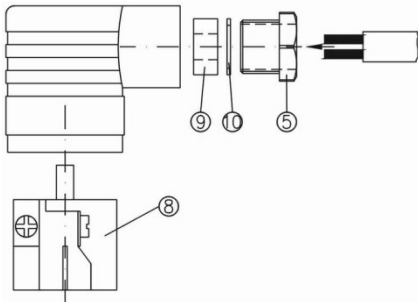


Fig. 10

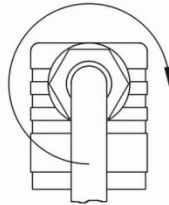


Fig. 11

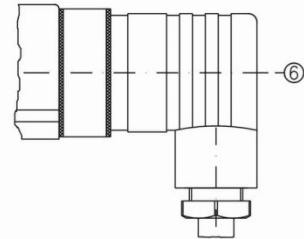


Fig. 12

- To guarantee the type of protection IP 65 according to EN 60529, the connecting cable has to have a sheathing diameter of between 4.5 and 10 mm.
- Furthermore, ensure that all seals ③, ④ and ⑨ at the plug connector are inserted correctly.

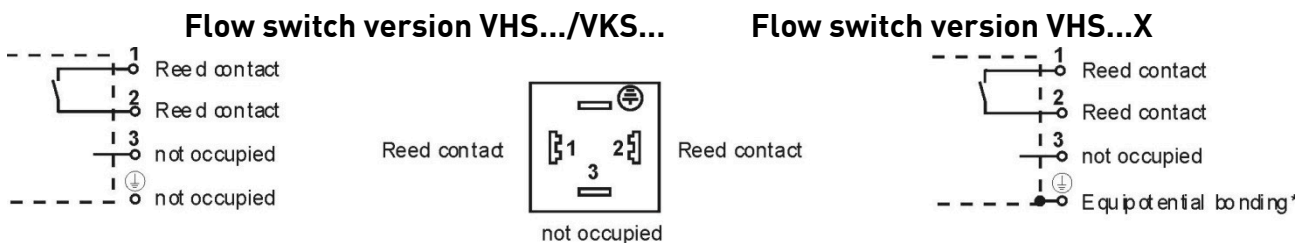


Fig. 13 * To prevent electrostatic charging the VHS...X devices have to be connected to the equipotential bonding via the plug connector.

5.3 Sensor plug M12x1 (4-pole)

- Only use suitable coupling sockets M12x1 for the connection. These are supplied as accessories with either a directly moulded cable or for self-assembly.

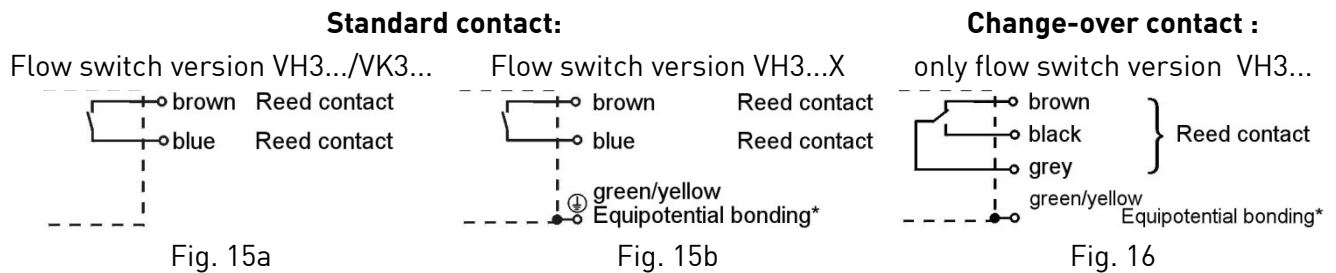
Pin assignment of the coupler connector:



Fig. 14

5.4 Fixed connecting cable

✎ Connect the connecting cable according to the connection diagram (→ Fig. 15, → Fig. 16):



* To prevent electrostatic charging the VH3...X devices have to be connected to the equipotential bonding via the fixed connecting cable.

6 Adjusting the switching unit

6.1 Type of contact

Standard contact:

The switching unit of the control switch enables two types of contact:

1. Normally open contact: "RED" arrow on the switching unit
2. Normally closed contact: "WHITE" or "BLUE" arrow on the switching unit

The following table explains the two types of contact:

Type of contact	Setting	Flow rate	Electric contact
Normally open contact	RED arrow	increasing	closing
		decreasing	opening
Normally closed contact	WHITE or BLUE arrow	increasing	opening
		decreasing	closing

If not otherwise agreed with the customer, the switching unit is factory set as a normally open contact.

Change-over contact (only for VH3...):

For flow switches with a change-over contact a fine adjustment can only be carried out within the red arrow. The contact switches after reaching the set switching point.

6.2 Flow switch version VH...X

The flow switch version VH...X is supplied ex works with normally open contact and a fixed switching point. Adjustment of the type of contact and the switching point for flow switch version VH...X is not permitted.

6.3 Flow switch version VHS... , VKS... und VK3...

- ✚ In order to adjust the switching unit, open the cover of the switching head (→ Fig. 17) (not required for VK3...)

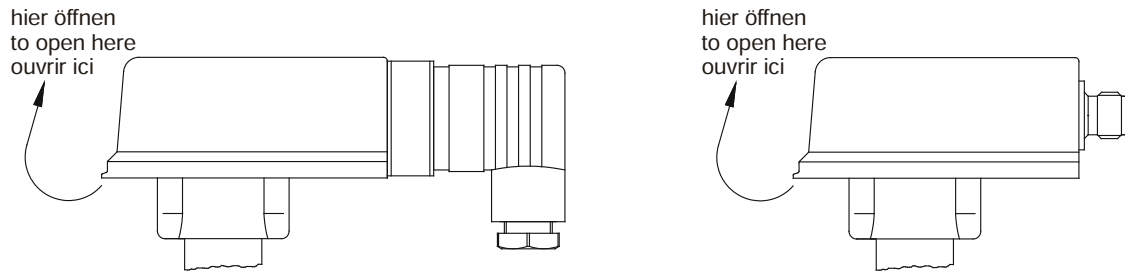


Fig.17

- ✚ Subsequently loosen the locking screw (2.5 hexagon socket screw for the brass and stainless steel version or recessed head screw for the plastic version) and position the switching unit until the red or white arrow are visible at the entry of the switching contact guide for a desired make contact (→ Fig. 18) or break contact (→ Fig. 19) respectively.

- ✚ The fine adjustment of the switching point can be carried out on the basis of the arrow length:
 Movement towards the arrow head: Switching point is set to lower flow rate.
 Movement towards the arrow tail: Switching point is set to higher flow rate.

- ✚ Carefully retighten the locking screw.

- ✚ We recommend you to use lacquer/threadlocker to secure the locking screw of the switching unit after carrying out individual adjustments.

- ✚ Close the cover until it locks into place (not required for VK3...).

Adjustment of the switching unit is not required if a desired ex works switching point setting has been agreed with the customer.



IMPORTANT! Observe during fine adjustment.

Fine adjustment is not possible with the VHS06..., VHS07..., VKS06..., VKS07..., VK306... and VK307... versions.

You can only change the contact type by moving the switch unit.

Normally open contact (red arrow)

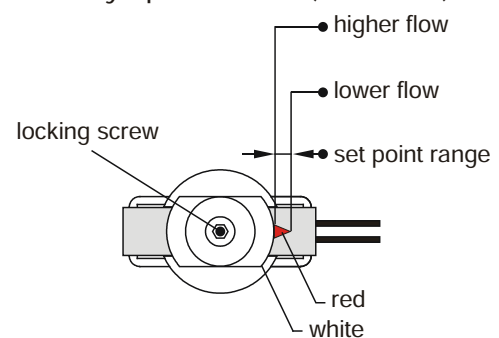


Fig. 18

Normally closed contact (white arrow)

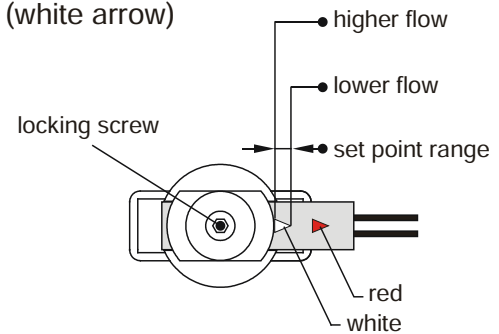


Fig. 19

6.4 Flow switch version VH3...

- ✚ Loosen the locking screw in order to adjust the switching unit (1.5 mm hexagon socket screw).
- ✚ Subsequently position the switching unit until the red (→ Fig. 20) or the blue arrow (→ Fig. 21) are visible at the entry of the switching unit guide for a desired make or break contact respectively (not required for change-over contact).
- ✚ The fine adjustment of the switching point can be carried out on the basis of the arrow length:
 - Movement towards the arrow head: Switching point is set to lower flow rate.
 - Movement towards the arrow tail: Switching point is set to higher flow rate.
- ✚ Carefully retighten the locking screw.
- ✚ We recommend you to use lacquer/threadlocker to secure the locking screw of the switching unit after carrying out individual adjustments.

Adjustment of the switching unit is not required if a desired ex works switching point setting has been agreed with the customer.

Normally open contact (red arrow)

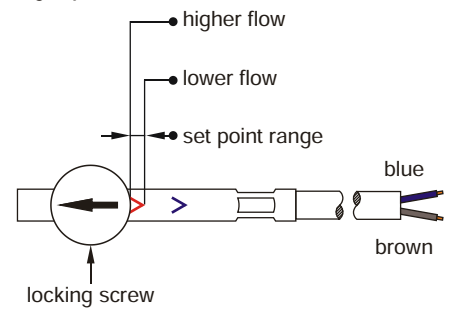


Fig. 20

Normally closed contact (blue arrow)

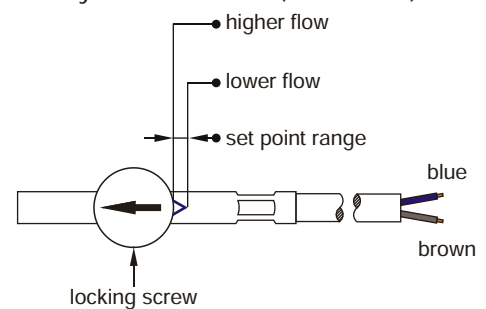


Fig. 21

7 Maintenance and Cleaning

Maintenance:

The VH... / VK... is maintenance-free and cannot be repaired by the user. In case of a defect, the device must be replaced or sent back the manufacturer for repair.



CAUTION! Material damage!

When opening the device, critical parts or components can be damaged.

- ✚ Open the device carefully (not required for VK3...).

Cleaning:

Clean the VH... / VK... with a dry or slightly damp lint-free cloth. Do not use sharp objects or aggressive agents for cleaning

8 Decommissioning and Disposal



CAUTION! Risk of injury!

Never remove a flow switch or its body from a system under pressure.

✚ Make sure that the plant is shut down professionally.

Before disassembly:

Prior to disassembly, ensure that

- ☐ the equipment is switched off and is in a safe and de-energised state.
- ☐ the equipment is depressurised and has cooled down.

Disassembly:

- ✚ Remove the electrical connectors.
- ✚ Remove the VH... / VK... using suitable tools.

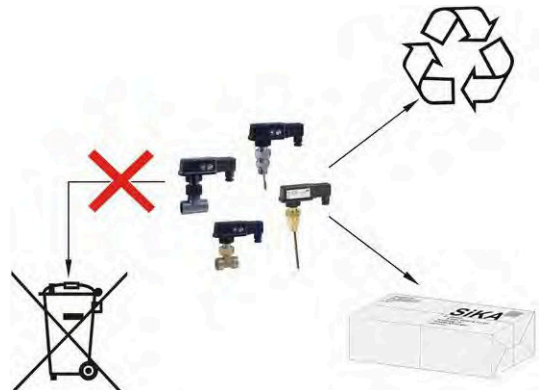
Disposal:



NO HOUSEHOLD WASTE!

The VH... / VK... consists of various different materials (→ § 3). It must not be disposed of with household waste.

- ✚ Take the VH... / VK... to your local recycling plant
- or
- ✚ send the VH... / VK... back to your supplier or to SIKA.



9 Technical data

The technical data of customised versions may differ from these data in the instructions. Please observe the information specified on the type plate.

Flow switch version VH... und VK...

Series	VHS...	VH3... *1)	VH3... *2)	VKS...	VK3...	VKS...K	VK3...K
Nominal pressure	PN 25			PN 10 *3)		PN 10	PN 10
Max. medium temper- ature (the medium should never freeze)	110 °C			100 °C		20 °C (PN 10); 60 °C (PN 2,5)	
Ambient temperature (do not store at <4 °C)	80 °C, 100 °C (optional)				70 °C	60 °C	
Max. switching current	1 A		0,2 A	1 A			
Max. switching voltage	230 VAC, 48 VDC		30 VAC/DC	230 VAC, 48 VDC			
Max. switching capacity	26 VA, 20 W		3 VA, 3 W	26 VA, 20 W			
Protection class	II		I	II			
Degree of protection	IP 65						
Max. permanent tem- perature load of the cable	—	105 °C	80 °C	—	70 °C 105 °C (optional)	—	70 °C 105 °C (optional)
Connecting cable length	—	1,5 m		—	1,5 m	—	1,5 m
Cable cross-shaped section	—	0,75 mm²	0,5 mm²	—	0,5 mm²	—	0,5 mm²
Tolerance of the switching point ranges	±15 %						

*1) Normally open/closed contact. *2) Change-over contact *3) Reduced pressure level for devices with copper pipe section. Please observe the details on the type plate!

Flow switch version VH...X

Series	VHS...X	VH3...X
Nominal pressure	PN 25	
Max. medium temperature (the medium should never freeze)	100 °C	
Ambient temperature (do not store at <4 °C)	70 °C	
Max. switching current	1 A	
Max. switching voltage	230 VAC, 48 VDC	
Max. switching capacity	26 VA, 20 W	
Protection class	II	I
Degree of protection	IP 65	
Max. permanent temperature of the cable	—	70 °C
Connecting cable length	—	1,5 m
Cable cross-shaped section	—	0,5 mm ²
Tolerance of the switching point ranges	±15 %	

Applies for flow switch version VH...X

The ignition energy of the explosive atmosphere should not be below 60μJ.
The effective internal inductances and capacities are negligibly small

9.1 Maximum flow rate of the flow switch

The max. permissible flow rate can deviate from the specified limit values for customised versions.

The maximum specifications relate to water as the medium and a continuous flow rate.

Flow switch with pipe section

Series	Brass/Stainless steel pipe section		PVC pipe section
	VH...	VK...	VK...
Nominal diameter	max. flow rate [l/min]	max. flow rate [l/min]	max. flow rate [l/min]
DN 8	45	15	--
DN 10	60	20	--
DN 15	67	30	50
DN 15 (external thread)	60	20	--
DN 20	120	80	100
DN 25	195	130	100
DN 32	240	180	150
DN 40	400	300	200 (260)*
DN 50	400	350	260 (350)*

* The values in brackets apply to shortened paddles.

Flow switch for direct installation

Series		VH...	VK...
Type	Nominal diameter	max. flow rate [m³/h]	max. flow rate [m³/h]
V...05M... (mounting length 51 mm)	DN 50	30	25
	DN 80	80	65
	DN 100	150	100
	DN 150	200	170
V...06M... (mounting length 111 mm)	DN 100	100	40
	DN 150	150	95
	DN 200	200	160
V...01M... with soldered/welded adapter (mounting length 24 mm)	DN 50	30	--
	DN 80	100	--
	DN 100	150	--
	DN 150	200	--

10 Approvals

The SIKA flow switches are type-approved by TÜV Rheinland, mark of conformity R 60019031 dated 29.08.2007 (not valid for version with sensor plug M12x1 and for VH...X).



Reference No. 1102336

11 EC Declaration of Conformity



EG- Konformitätserklärung
EC Declaration of Conformity

Wir erklären, dass die Produkte
We declare that the products

der Baureihe
series

hergestellt von
manufactured by

übereinstimmen mit
comply with

Strömungsschalter
Flow Switch

VHS M, VHS X, VKS M

SIKA Dr. Siebert & Kühn GmbH & Co. KG

Richtlinie 2014/35/EU des Europäischen Parlaments und des Rates vom 26. Februar 2014 zur Harmonisierung der Rechtsvorschriften der Mitgliedstaaten über die Bereitstellung elektrischer Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen auf dem Markt
Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits

NiedersprRL 2014/35/EU

LVD directive

RoHS 2011/65/EU

RoHS directive

Die Geräte entsprechen folgenden technischen Vorschriften
The devices comply with following technical specifications

Sicherheit von Maschinen - Elektrische Ausrüstung von Maschinen - Teil 1: Allgemeine Anforderungen
Safety of machinery - Electrical equipment of machines - Part 1: General requirements

DIN EN 60204-1:2014-10

Technische Dokumentation zur Beurteilung von Elektro- und Elektronikgeräten hinsichtlich der Beschränkung gefährlicher Stoffe; Deutsche Fassung EN 50581:2012
Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances; German version EN 50581:2012


DIN EN 50581:2013-02

Kaufungen, den 21. April 2016

I.V.

Dipl.-Ing. K. Ulloth
(CE-Koordinator und Produktsicherheitsbeauftragter)
(Manager CE-Coordination and Safety Supervisor)

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EG- Konformitätserklärung
EC Declaration of Conformity

Wir erklären, dass die Produkte
We declare that the products

der Baureihe
series

hergestellt von
manufactured by

übereinstimmen mit
comply with

Strömungsschalter
Flow Switch

VH3..M, VK3..M, VH3.., VH3..X, VKX..

SIKA Dr. Siebert & Kühn GmbH & Co. KG

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DIN EN 50581:2013-02

Kaufungen, den 20. April 2016

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