

## Magnetic Float Switches



### Applications

- Chemical, petrochemical, liquid natural gas, off-shore
- ship-building, machine-building industry
- manufacturing industry, power plants
- pharmaceutical industry, beverages- and food industry,
- water treatment

### Special features

- Universal signal processing:  
PLC, Initiator circuit (NAMUR),  
Signal amplifiers / Protection relays,  
2-point controls
- Explosion-proof designs
- Application limits: T = -196 °C to +300 °C  
P = vacuum to 100 bar  
S.G.  $\geq 400 \text{ kg/m}^3$

### Description

KSR Magnetic Float Switches are used to control distinct levels of a liquid. They are based on the float principle with individual contacts for every level to be monitored.

A float with a built-in magnetic system actuates a small reed contact through the wall of the guide tube. Thus the switching operation is without direct contact to the liquid, free of wear and tear, and does not require any power supply. KSR Magnetic Float Switches are available with multiple switch points.

Contact denomination always refers to rising level of the liquid:  
S - closing on rising level / O - opening on rising level U - change-over.

By using one float up to a maximum of 2 switch points the switching behaviour is bistable i.e. the switching state will remain the same even when the liquid moves further up or down.

Contacts are volt-free.



*Magnet Float switches with  
2 spherical floats*

# Approvals



IBExU Institut für  
Sicherheitstechnik GmbH



Bundesamt für Wehrtechnik und  
Beschaffung



Factory Mutual Research Corporation



KEMA



Laboratoire Central des  
Industries Electriques



Bureau Veritas



Det Norske Veritas



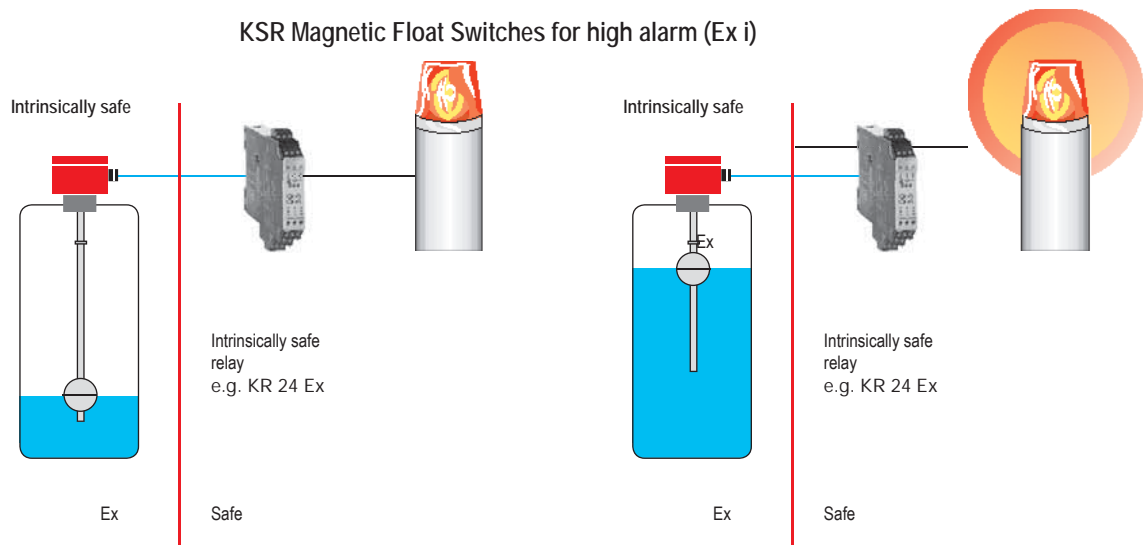
Gosgortchnadzor OGS  
Oil & Gas Safety

## Applications

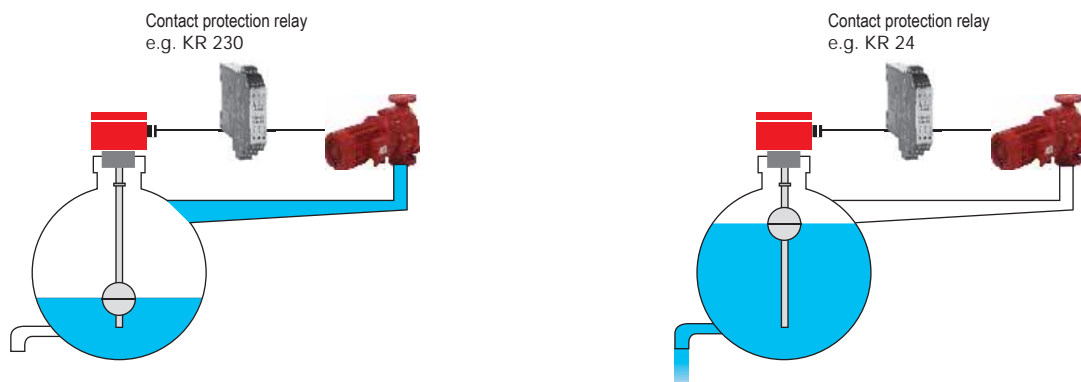
### Technical advantages

- The simple operating principle is suitable for a wide variety of applications
- Suitable for virtually all liquids
- Measurement of liquid levels independent of physical or chemical changes of the liquid, e.g. foam, conductivity, dielectric constant, S.G., pressure, vacuum, temperature, vapour, condensation, bubbles, boiling effect
- Ex/non-Ex
- Multiple switch points in one unit (up to 8)
- High repeatability of set points
- Long service life
- Suitable for rough environments
- Interface and product level measurement possible at  $\Delta\text{-S.G.} \geq 50 \text{ kg / m}^3$
- Simple installation and commissioning, maintenance-free
- Application specific designs available
- Float switches are simple devices without certification according DIN 60079-11 IEC. As such, they are allowed to be used in Ex-area 'Zone 1', on condition, that they work with a certified intrinsically safe circuit in protection class EEx ib or higher

### KSR Magnetic Float Switches for high alarm (Ex i)



### Magnetic Float Switches for 2-point control (min/max.)

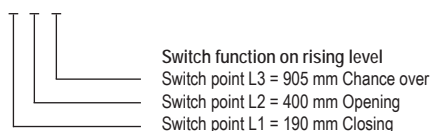


# Type Code

Code	1st key	2nd key	3rd key
<b>1</b>	<b>Electrical connection</b>	<b>Process connection</b>	<b>Material process connection</b>
.../.../...	- (none) - connection cable	ER Mounting thread upwards (BSP)	V Stainless steel SS 316 Ti
A	Terminal box Aluminium	R Mounting thread downwards (BSP)	VE Stainless steel polished
AB	Terminal box Polypropylene	ENPT Mounting thread upwards (NPT)	VEC Stainless steel ECTFE-coated
AP	Terminal box Polyester	NPT Mounting thread downwards (NPT)	VTF Stainless steel PTFE-lined
AVT	Terminal box, with screw cap	MR Dairy fitting acc. to DIN 11851	T Titanium
	Stainless steel SS 316 Ti	F Flange (DIN, ANSI, JIS)	HB Hastelloy B
ADF	Terminal box, flameproof	FC Clamp-connection acc. to DIN 32676	HC Hastelloy C
	Aluminium	IS Sanitary nozzle (Ingoldstutzen)	P PVC
ASC4	Coupler plug C 164-232-F-4P		PP Polypropylene
ASC5	Coupler plug C 164-332-F-5P		PF PVDF
ASC7	Coupler plug C 164-4337-F-7P		M Brass flange OD 74 mm
ASM	Coupler plug M12		K Oval flange, Polyamide
ASM	Coupler plug M12		
<b>2</b>	<b>Size process connection</b>		
.../.../...	... Mounting thread size in inches		
	... Threaded connection size DN 50 - DN 150		
	.../ Flange nominal size	.../ Flange pressure rating	... Flange face
DIN	DN 50 - DN 200	PN 6 - PN 100	Standard Form C optional E, A, F, N
ANSI	2"- 8"	Class 150 - 600	Standard RF optional RTJ, FF, ST, SG
JIS	2"(DN 50) - 8"(DN 200)	5 K- 63 K	Standard RF optional RTJ, FF, ST, SG
Clamp	DN 25 - DN 100; 1"- 4"		
<b>3</b>	<b>Guide tube material</b>	<b>Contact function</b>	<b>Optional code adder</b>
.../.../...	V Stainless steel SS 316 Ti	S Closing	/HT.. High temperature +150 °C ... +300 °C
	VE Stainless steel electropolished	O Opening	/TT.. Low temperature -30 °C ... -196 °C
	VEC Stainless steel ECTFE-coated	U Change over	
	VTF Stainless steel PTFE-lined		/H Increased hysteresis
	HB Hastelloy B		/PT100 Temperature probe PT 100 (2-,3- or 4-core)
	HC Hastelloy C		/..TH.. Temperature switch ... °C - closing or opening
	P PVC		/R... Current limitation using resistor .. Ohm
	PP Polypropylene		/N acc. to NAMUR DIN EN 60947-5-6
	PF PVDF		
	W... Angular design (V, P, PP)		
<b>4</b>	<b>Guide tube length</b>	<b>OD Guide tube</b>	
L.../...	L.../ length in mm	... OD in mm	
<b>5</b>	<b>Float design, (page 30-31)</b>		
.../...	.../ Material (code 3, 1st key)	... Float OD in mm	
<b>6</b>	<b>Connection cable</b>	<b>Cable material</b>	<b>Optional adder</b>
.../...	.../ length in Meter	— PVC-grey	/SL Earth connection
		blau PVC-blue	
		SIL Silicone	
		PUR PUR	






## Order example

Code	Connection design / material	Connection size	Guide tube material contact function	Guide tube length / OD	Float	Cable length / material
	1	2	3	4	5	6
	AFV	50/6/F	V S O U	L950/12	V44A	-

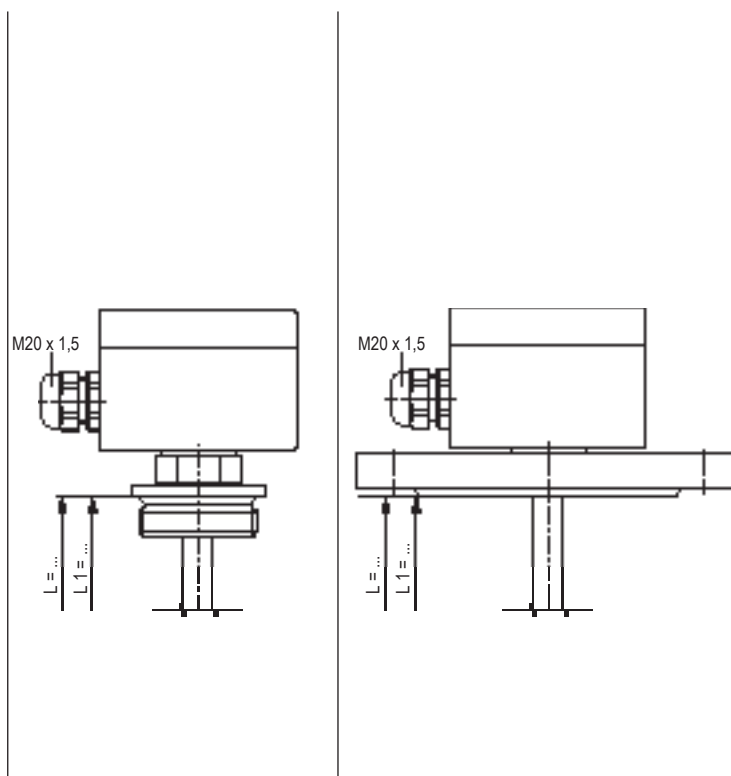
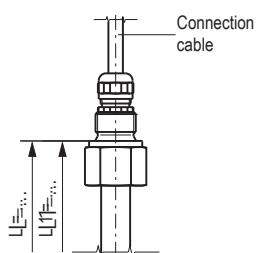


## Product Programm Overview

Please select connecting option and material and turn to the page referred to in the following table.

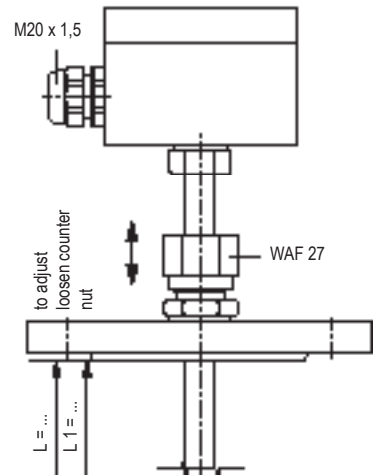
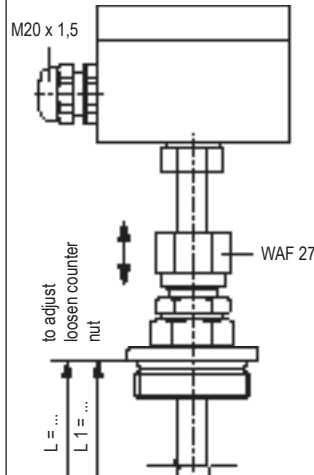
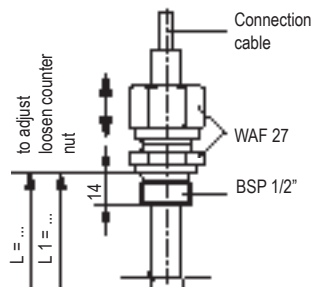
Process	Material			
	Stainless steel (1.4571)	Stainless steel SS 316 Ti (1.4571)	 PVC / SS 316 Ti / PVDF	Aluminium / PP Bronze
 <p>Thread BSP 1/8" BSP 3/8" BSP 1/2" BSP 1"</p>	<p>Page 6/12 7 adjustable 14 mini 28 sanitary</p>	—	<p>Page 18/19/20</p>	—
 <p>Thread BSP 3/4" BSP 1" BSP 1 1/2" BSP 2"</p>	<p>Page 6/12 7 adjustable 14 mini</p>	<p>Page 8/9</p>	<p>Page 18/19/20</p>	—
 <p>Flange DN...PN..</p>	<p>Page 6/12 7 adjustable 14 coated</p>	<p>Page 8/9</p>	<p>Page 18/19/20</p>	—
 <p>Angular design</p>	<p>Page 16</p>	—	<p>Page 17</p>	—
<p>Bypass- Float Switches</p>	<p>Page 27</p>	—	—	<p>Page 26</p>

# Design: Stainless steel SS 316 Ti (1.4571)



	ERV...-V-L.../..-V..A-1...		ARV...-V-L.../..-V..A		AFV.../.../..-V-L.../..-V..A	
Electrical connection	Cable PVC-grey, PVC-blue, Silicone		Terminal box Aluminium 64 x 58 x 34 mm, with 1 contact Aluminium 80 x 75 x 57 mm, 2 or more contacts Option: Polypropylene, Polyester, Stainless steel			
Process connection	Mounting thread upwards BSP 3/8"   BSP 1/2"		Mounting thread downwards BSP 1 1/2" or BSP 2"		Mounting flange DIN DN 50 - DN 200, PN 6 - PN 100 ANSI 2" - 8", Class 150 - 600	
Guide tube - Ø	12 or 14 mm	18 mm	12 or 14 mm	18 mm	12 or 14 mm	18 mm
Guide tube length max.	3000 mm	6000 mm	3000 mm	6000 mm	3000 mm	6000 mm
Float	V44A, V52A, V62A, V83A V80A, V98A, V105A, V120A		guide tube - Ø 12 or 14 mm guide tube - Ø 18 mm			
Limit S.G. 85 % Limit S.G. 50 % Nominal pressure	see Tables page 30/31 (Floats)					
Temperature range Standard	PVC- / PUR cable Silicone cable	-10 °C ... +80 °C -30 °C ... +150 °C	-30 °C ... +150 °C			
High temperature			Optional code (HT..)	+150 °C ... +300 °C	Please take notice page 29	
Low temperature			Optional code (TT..)	-30 °C ... -196 °C		
Switch function	optional closing S, opening O or change-over SPDT U - on rising level					
Number of contacts	PVC cable 6 x S or O, or 4 x U Silicone cable 5 x S or O, or 3 x U		6 x S or O, or 4 x U			
Switch rating	closing opening change-over	230 V AC; 100 VA; 1 A 230 V AC; 100 VA; 1 A 230 V AC; 40 VA; 1 A	230 V DC; 50 W; 0,5 A 230 V DC; 50 W; 0,5 A 230 V DC; 20 W; 0,5 A		Please take notice the contact protection!	
	Attention: Designs without earthing connection - use low voltage only e.g. contact protection relays (see catalogue 1011) or external protective earth					
Orientation	vertical ± 30°					
Ingress protection	IP 65					
	Materials 1.4435, 1.4539, Titanium, Hastelloy and others available upon request					

# Design: Stainless steel SS 316 Ti (1.4571) - adjustable



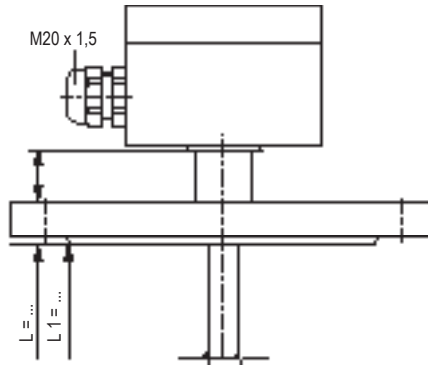
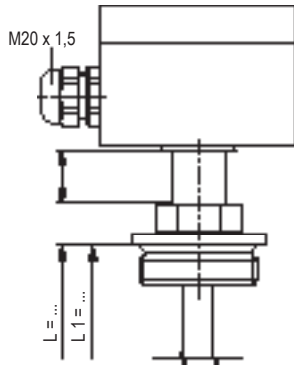
	RV-1/2"-V.-L.../12-V..A-1...-verst.	ARV...-V.-L.../12-V..A-verst.	AFV-.../...-V.-L.../12-V..A-verst.
Electrical connection	Cable PVC-grey, PVC-blue, Silicone, PUR	Terminal box Aluminium 64 x 58 x 34 mm, with 1 contact Aluminium 80 x 75 x 57 mm, 2 or more contacts Option: Polypropylene, Polyester, Stainless steel	
Process connection	Mounting thread downwards BSP 1/2"	Mounting thread downwards BSP 1 1/2" or BSP 2"	Mounting flange DIN DN 50 - DN 200, PN 6 - PN 100 ANSI 2" - 8", Class 150 - 600
Guide tube - Ø	12 mm		
Guide tube length max.	3000 mm		
Float	V44A, V52A, V62A, V83A		
Limit S.G. 85 % Limit S.G. 50 %	see Tables page 30/31 (Floats)		
Nominal pressure	5 bar		
Temperature range Standard	PVC- / Oilflexable -10 °C ... +80 °C Silicone cable -30 °C ... +150 °C	-30 °C ... +150 °C	
Switch function	optional closing S, opening O or change-over SPDT U - on rising level		
Number of contacts	PVC cable 6 x S or O, or 4 x U Silicone cable 5 x S or O, or 3 x U	6 x S or O, or 4 x U	
Switch rating	closing 230 V AC; 100 VA; 1 A opening 230 V AC; 100 VA; 1 A change-over 230 V AC; 40 VA; 1 A	230 V DC; 50 W; 0,5 A 230 V DC; 50 W; 0,5 A 230 V DC; 20 W; 0,5 A	Please take notice the contact protection!
	Attention: Designs without earthing connection - use low voltage only e.g. contact protection relays (see catalogue 1011) or external protective earth		
Orientation	vertical ± 30°		
Ingress protection	IP 54	IP 65	
	Materials 1.4435, 1.4539, Titanium, Hastelloy and others available upon request		

Design: II 1G EEx ia IIC T3-T6 KEMA 01 ATEX 1053X



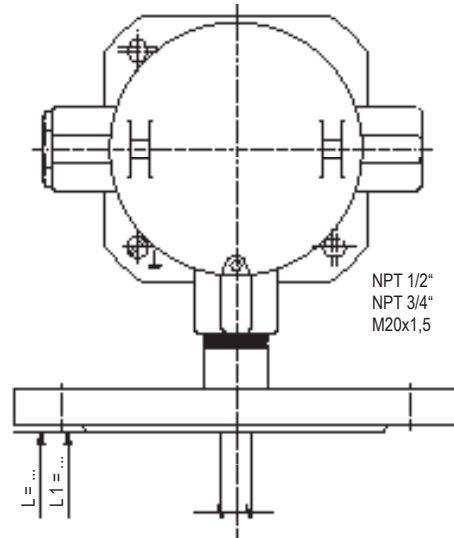
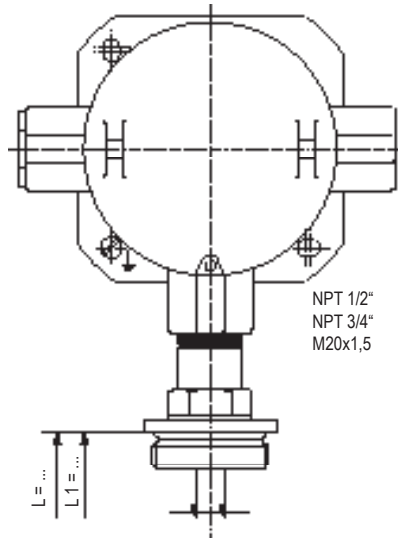
II 2D T80 °C IP6X

Process temperature	Raised terminal box
	X
< 60 °C	0 mm
< 135 °C	60 mm
< 180 °C	80 mm



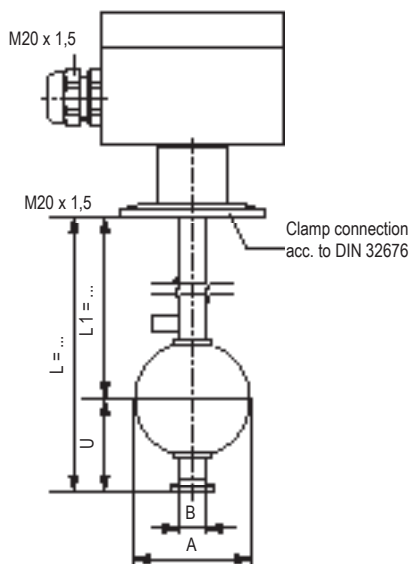
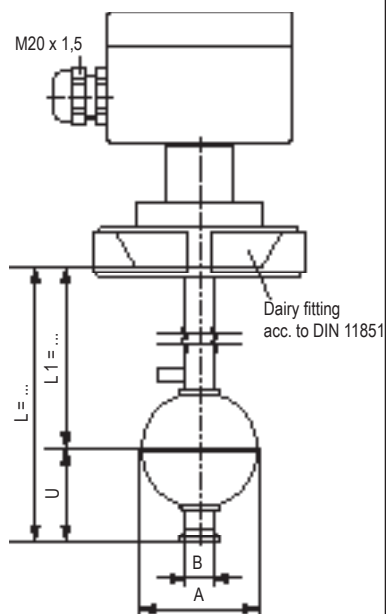
	60-ARV...-V-L...-V-A-Ex		60-AFV...-V-L...-V-A-Ex		
Electrical connection	Terminal box Aluminium 80 x 75 x 57 mm Option		Polyester, Stainless steel		
Process connection	Mounting thread downwards BSP 1" - BSP 2"		Mounting flange DIN DN 50 - DN 150, PN 6 - PN 64 ANSI 2" - 6", Class 150 - 600		
Guide tube - Ø	12 mm or 14 mm	18mm	12 mm or 14 mm	18 mm	
Guide tube length max.	3000 mm	6000 mm	3000 mm	6000 mm	
Float	V44A, V52A, V62A, V83A V80A, V98A, V105A, V120A	guide tube - Ø 12 or 14 mm guide tube - Ø 18 mm			
Limit S.G. 85 %	see Tables page 30/31 (Floats)				
Nominal pressure					
Temperature class		T3	T4	T5	T6
Process temperature	max.	180 °C	130 °C	95 °C	80 °C
Ambient temperature at terminal box	max.	60 °C	60 °C	60 °C	60°C
Switch function	optional closing S or opening O or change-over SPDT U - on rising level				
Number of contacts	6 x S or O, or 4 x U				
Switch rating	only for use in certified intrinsically safe circuits with Umax 36 V, I <sub>max</sub> 100 mA				
Orientation	vertical ± 30°				
Ingress protection	IP 65				
Options	/PT100 = Temperature probe /PT1000 = Temperature probe /..TH.. = Temperature switch ...°C - closing or opening /N = acc. to NAMUR DIN EN 60947-5-6				
	Materials 1.4435, Titanium and Hastelloy upon request				





	AL-ADF-RV...-V-L...-...A		AL-ADF-FV...-V-L...-...A	
Electrical connection	Terminal box Aluminium	Option: Stainless steel		
Process connection	Mounting thread downwards BSP 1 1/2" or BSP 2"		Mounting flange DIN DN 50 - DN 200, PN 6 - PN 100 ANSI 2" - 8", Class 150 - 600	
Guide tube - Ø	12 mm or 14 mm	18mm	12 mm or 14 mm	18 mm
Guide tube length max.	3000 mm	6000 mm	3000 mm	6000 mm
Float	V44A, V52A, V62A, V83A V80A, V98A, V105A, V120A	guide tube - Ø 12 or 14 mm guide tube - Ø 18 mm		
Limit S.G. 85 % Limit S.G. 50 % Nominal pressure	see Tables page 30/31 (Floats)			
Temperature class		T4	T5	T6
Process temperature	max.	120 °C	95 °C	80 °C
Switch function	change-over SPDT U - on rising level			
Number of contacts	4 x U			
Switch rating	change-over SPDT	230 V AC, 40 VA; 1 A 230 V DC, 20 W; 0,5 A	Please take notice the contact protection!	
Orientation	vertical ± 30°			
Ingress protection	IP 65			

# Design: Food industry - Stainless steel SS 316 L



	AMRV...-VE...L.../-...VE..A	AFCV...-VE...L.../-...VE..A
Electrical connection	Terminal box Aluminium 64 x 58 x 34 mm, with 1 contact, Aluminium 80 x 75 x 57 mm, 2 or more contacts Option: Polypropylene, Polyester, Stainless steel	
Process connection	Dairy fitting acc. to DIN 11851 DN50 - DN150	Clamp-connection acc. to DIN 32676 DN 25 - DN 100 or 1" - 4"
Guide tube - Ø	12 mm, 14 mm or 18 mm	
Guide tube length max.	3000 mm guide tube Ø 12 mm and 14 mm	6000 mm guide tube Ø 18 mm
Float	V44A, V52A, V62A, V83A V80A, V98A, V105A, V120A	guide tube - Ø 12 or 14 mm guide tube - Ø 18 mm
Limit S.G. 85 % Limit S.G. 50 % Nominal pressure	see Tables page 30/31 (Floats)	
Temp. range standard	-30 °C ... +150 °C	
High temperature (HT..)	(HT..) +150 °C ... +300 °C	Please take notice page 29 page 29
Switch function	optional closing S, opening O or change-over SPDT U - on rising level	
Number of contacts	6 x S or O, or 4 x U	
Switch rating	closing 230 V AC; 100 VA; 1 A opening 230 V AC; 100 VA; 1 A change-over 230 V AC; 40 VA; 1 A	230 V DC; 50 W; 0,5 A 230 V DC; 50 W; 0,5 A 230 V DC; 20 W; 0,5 A
	Attention: Designs without earthing connection - use low voltage only e. g. contact protection relays (see catalogue 1011) or external protective earth	
Orientation	vertical ± 30°	
Ingress protection	IP 65	

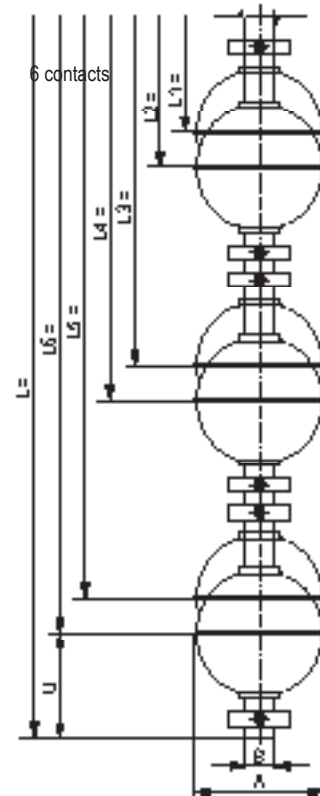
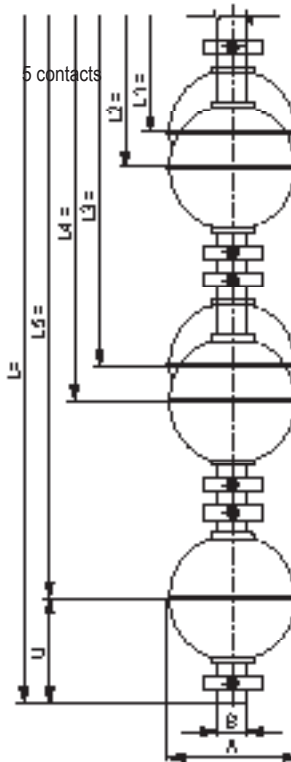
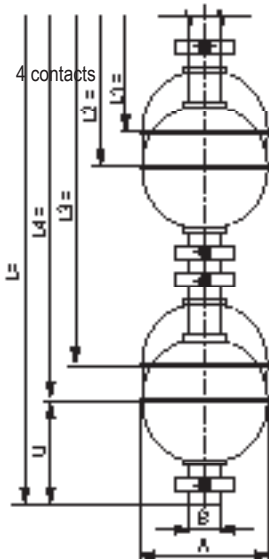
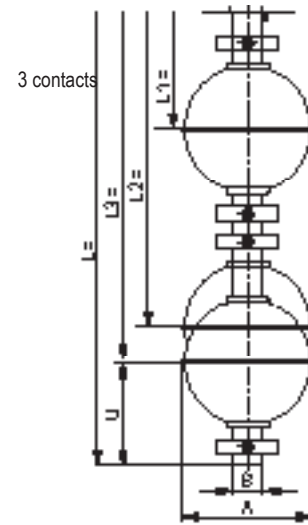
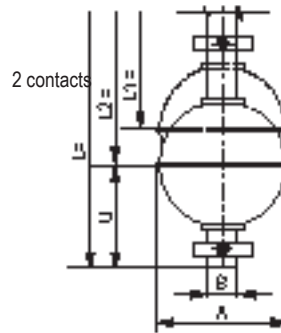
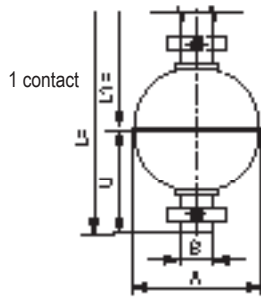
Please take notice the contact protection!

Float type	A Ø mm	B Ø mm	L1 min. mm	U min. mm	Distance between contacts	
					2 contacts 1 float mm	2 contacts 2 float mm
VE44A	44	12 or 14	55	45	20	80
VE52A	52	12 or 14	55	45	20	80
VE62A	62	12 or 14	60	50	20	90
VE83A	83	12 or 14	70	60	20	110
VE80A	80	18	90	65	20	125
VE98A	98	18	100	75	20	145
VE105A	105	18	105	80	20	155
VE120A	120	18	115	90	20	170

Connection diagrams page 32-33

# Switchpoint Dimensions

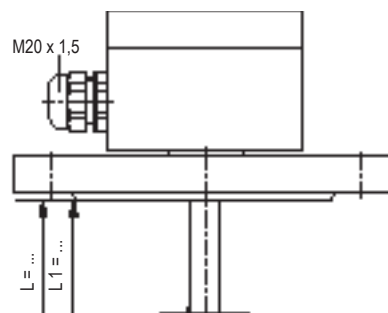
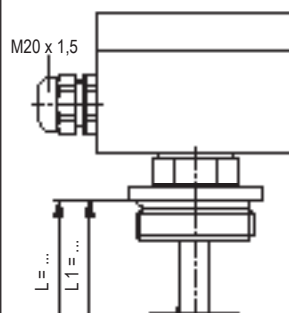
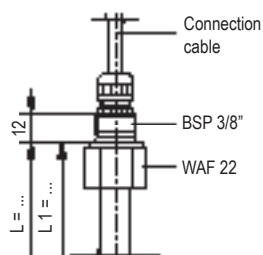
Page 6/7/8



Float type	A Ø mm	B Ø mm	L1 min. mm	U min. mm	Distance between contacts	
					2 contacts 1 float mm	2 contacts 2 float mm
V44A	44	12 or 14	55	45	20	80
V52A	52	12 or 14	55	45	20	80
V62A	62	12 or 14	60	50	20	90
V83A	83	12 or 14	70	60	20	110
V80A	80	18	90	65	20	125
V98A	98	18	100	75	20	145
V105A	105	18	105	80	20	155
V120A	120	18	115	90	20	170

Connection diagrams page 32-33

# Design: Stainless steel SS 316 Ti (1.4571) - Buna float



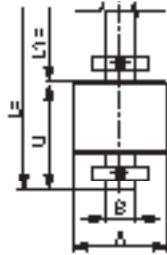
	ERV-3/8"-V-L.../..-B..A-1...	ARV-..."-V-L.../..-B..A	AFV-.../.../...-V-L.../..-B..A
Electrical connection	Cable PVC-grey, PVC-blue, Silicone, Oilflex	Terminal box Aluminium, Polypropylene, Polyester, Stainless steel	
Process connection	Mounting thread upwards BSP 3/8"	Mounting thread downwards BSP 1", BSP 1 1/2" or BSP 2"	Mounting flange DIN DN 40 - DN 100, PN 6 - PN 40 ANSI 1 1/2" - 4", Class 150 - 300
Guide tube - Ø	12 mm		
Guide tube length max.	3000 mm		
Float	B30A, B40A		
Limit S.G. 85 % Limit S.G. 50 % Nominal pressure	see Tables page 30/31 (Floats)		
Temperature range	-10 °C ... +80 °C		
Switch function	optional closing S, opening O or change-over SPDT U - on rising level		
Number of contacts	PVC cable 6 x S or O, or 4 x U Silicone cable 5 x S or O, or 3 x U	6 x S or O, or 4 x U	
Switch rating	closing 230 V AC; 100 VA; 1 A opening 230 V AC; 100 VA; 1 A change-over 230 V AC; 40 VA; 1 A	230 V DC; 50 W; 0,5 A 230 V DC; 50 W; 0,5 A 230 V DC; 20 W; 0,5 A	
	Attention: Designs without earthing connection - use low voltage only e. g. contact protection relays (see catalogue 1011) or external protective earth		
Orientation	vertical ± 30°		
Ingress protection	IP 65		

Please take notice the contact protection!

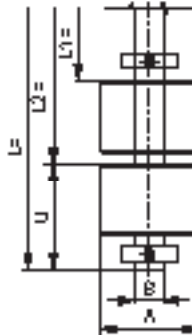
# Switchpoint Dimensions

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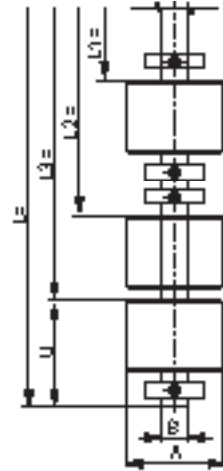
1 contact



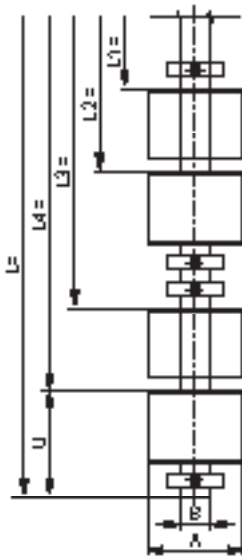
2 contacts



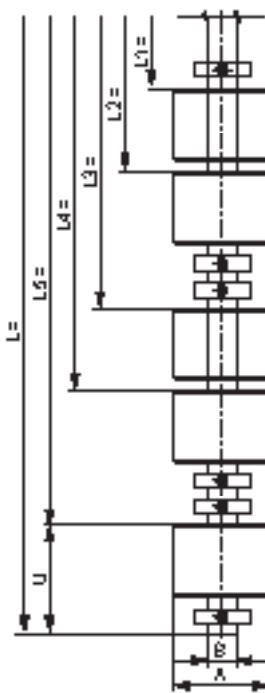
3 contacts



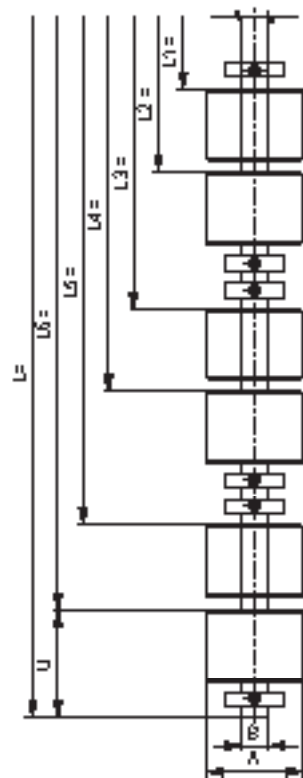
4 contacts



5 contacts



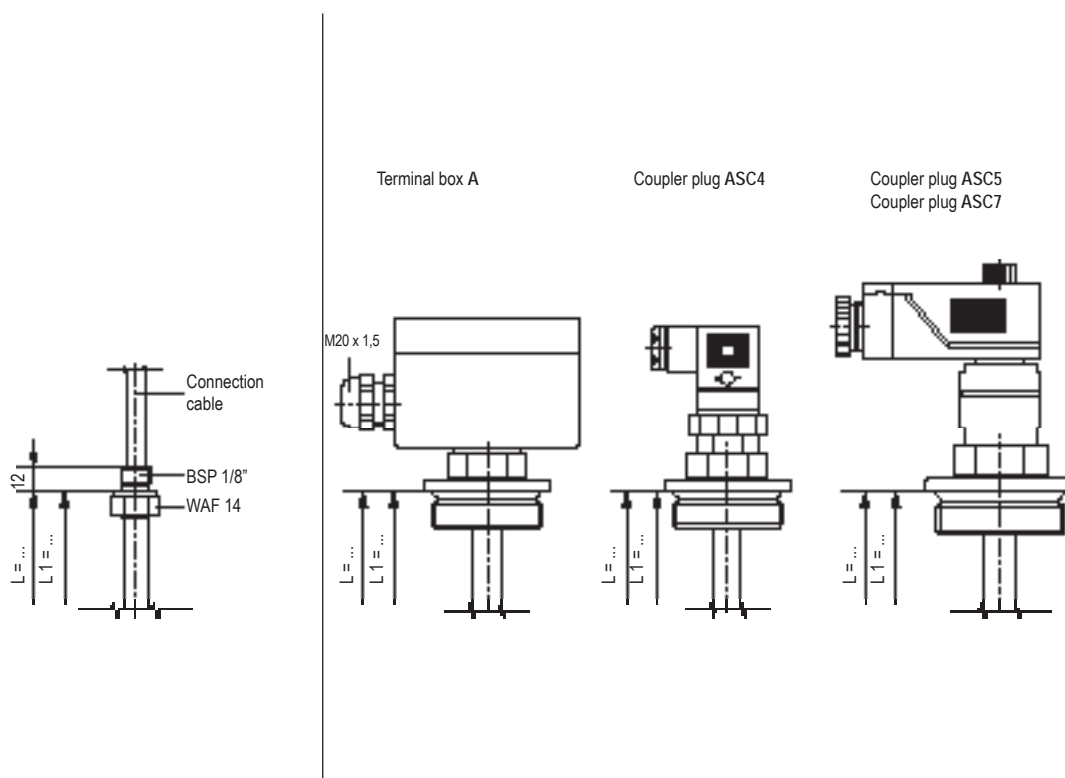
6 contacts



Float type	A Ø mm	B Ø mm	L1 min. mm	U min. mm	Distance between contacts	
					2 contacts 1 float mm	2 contacts 2 float mm
B30A	30	12	40	65	20	75
B40A	40	12	40	45	20	65

Connection diagrams page 32-33

# Design: Magnetic Float Switches Stainless steel SS 316 Ti (1.4571)

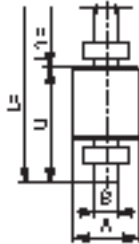


	ERV-1/8"-V-L.../8-B..A-1...	ERV-1/8"-V-L.../8-PP27A-1...	ERV-1/8"- V-L.../8-V29A/..-1...
Electrical connection	Cable PVC-grey, PVC-blue, Silicone, PUR		
Optional	Terminal box	A, Aluminium 64 x 58 x 34 mm	
	Coupler plug	ASC4, C 164-232-F-4P	
	Coupler plug	ASC5, C 164-332-F-5P	
	Coupler plug	ASC7, C 164-4337-F-7P	
Process connection	Mounting thread upwards BSP 1/8" Option Mounting thread downwards BSP 3/4" or BSP 1"		
Guide tube - Ø	8 mm		
Guide tube length max.	500 mm		
Float	Buna B23A, B25A	Polypropylene PP27A	Stainless steel V29A/0,15 or V29A/0,2
Limit S.G. 85 % Limit S.G. 50 % Nominal pressure	see Tables page 30/31 (Floats)		
Temperature range	-10 °C ... +60 °C	-10 °C ... +80 °C	-10 °C ... +100 °C
Switch function	optional closing S, opening O or change-over SPDT U - on rising level		
Number of contacts	3 x S or O, or 1 x U		
Switch rating	closing 250 V AC; 10 VA; 0,5 A opening 250 V AC; 10 VA; 0,5 A change-over 28 V AC; 6 VA; 0,6 A	250 V DC; 5 W; 0,25 A 250 V DC; 5 W; 0,25 A 28 V DC; 3 W; 0,3 A	Please take notice the contact protection!
	Attention: Designs without earthing connection - use low voltage only e.g. contact protection relays (see catalogue 1011) or external protective earth		
Orientation	vertical ± 30°		
Ingress protection	IP 54 with optional terminal box or connecting plug IP 65		

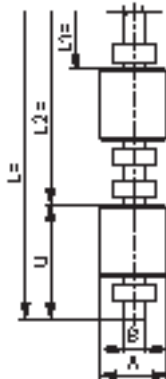
# Switchpoint Dimensions

Float type B..A

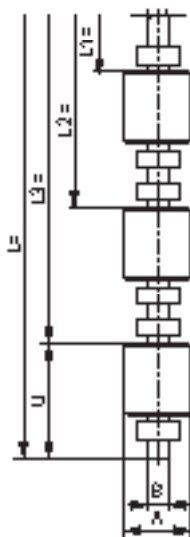
1 contact



2 contacts

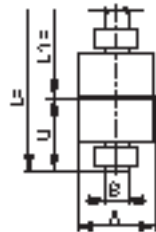


3 contacts

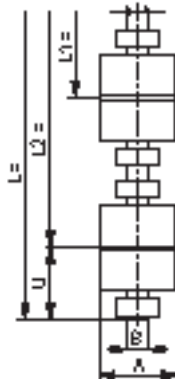


Float type PP27A

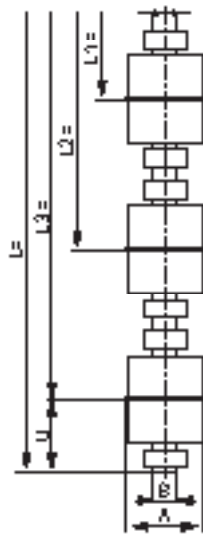
1 contact



2 contacts

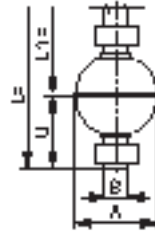


3 contacts

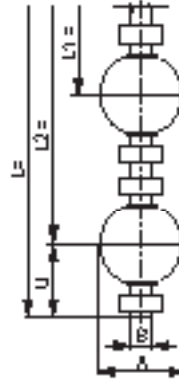


Float type V29A/..

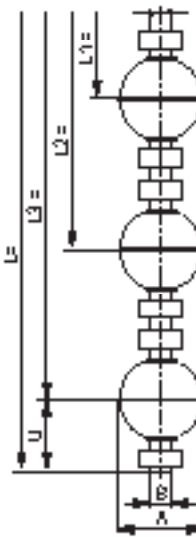
1 contact



2 contacts

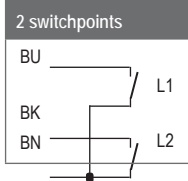
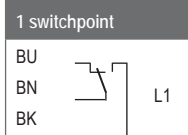


3 contacts

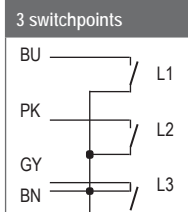


## Connection diagrams

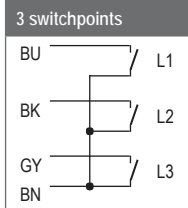
### Colour coding to IEC 757



### PVC cable

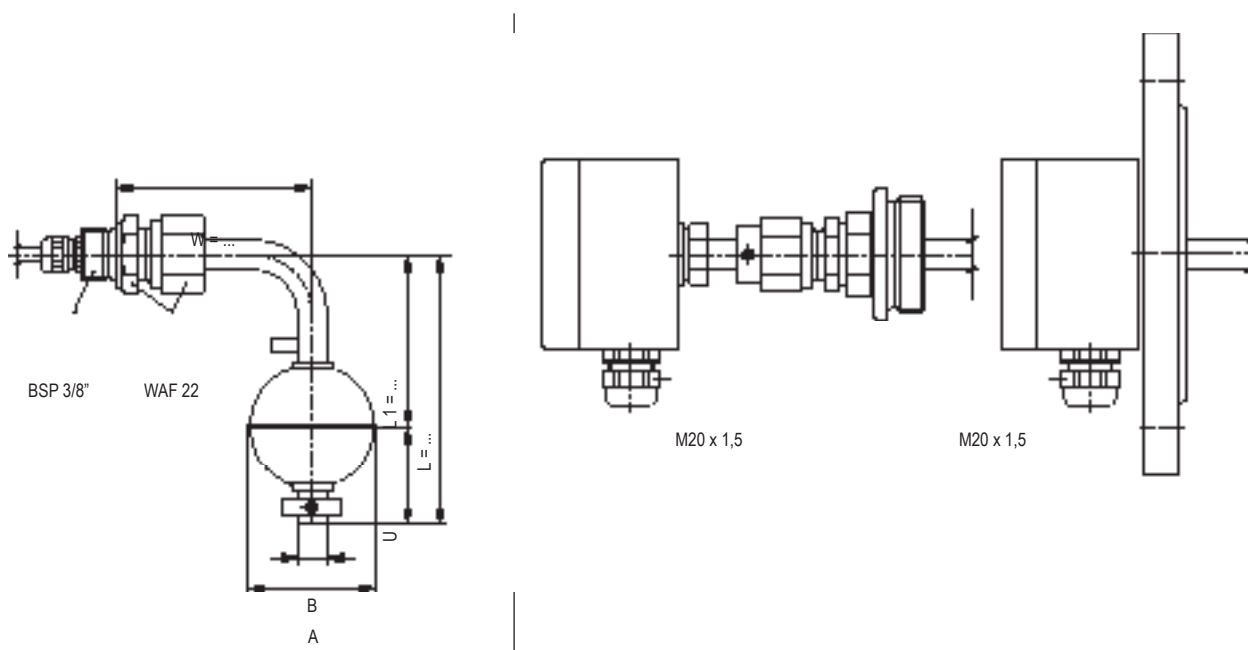


### Silicone cable



Float type	A Ø mm	B Ø mm	L1 min. mm	U min. mm	Distance between contacts
					2 contacts 2 floats mm
B23A	23	8	15	40	45
B25A	25	8	15	25	35
PP27A	27	8	35	25	50
V27A	27	8	35	25	50
V29A/0,15	29	8	35	25	50
V29A/0,2	29	8	35	25	50

# Design: Angular design - Stainless steel SS 316 Ti (1.4571)



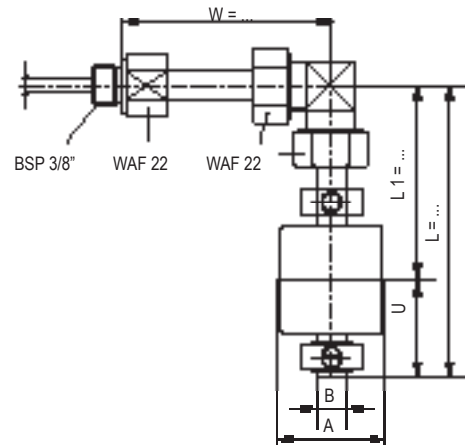
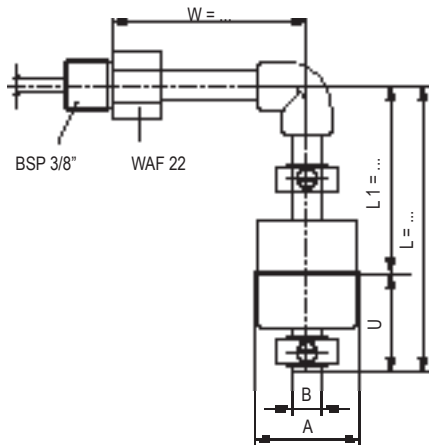
ERV-3/8"-W..V..L.../12-V..A-1...											
Electrical connection	Cable PVC-grey, PVC-blue, Silicone, PUR Option Terminal box										
Process connection	Mounting thread BSP 3/8" Option Mounting thread BSP 1 1/2" or BSP 2", Mounting flange acc. to DIN or ANSI										
Guide tube - Ø	12 mm										
Guide tube length max.	3000 mm										
Float	V44A, V52A, V62A, V83A										
Limit S.G. 85 % Limit S.G. 50 % Nominal pressure	see Tables page 30/31 (Floats)										
Temperature range	PVC and Oilflex cable -10 °C ... +80 °C, Silicone cable -30 °C ... +150 °C										
Switch function	optional closing S, opening O or change-over SPDT U - on rising level										
Number of contacts	PVC cable 6 x S or O or 4 x U, Silicone cable 3 x S or O or 2 x U										
Switch rating	<table border="0"> <tr> <td>closing</td> <td>230 V AC; 100 VA; 1 A</td> <td>230 V DC; 50 W; 0,5 A</td> <td rowspan="3">Please take notice the contact protection!</td> </tr> <tr> <td>opening</td> <td>230 V AC; 100 VA; 1 A</td> <td>230 V DC; 50 W; 0,5 A</td> </tr> <tr> <td>change-over</td> <td>230 V AC; 40 VA; 1 A</td> <td>230 V DC; 20 W; 0,5 A</td> </tr> </table> <p>Attention: Designs without earthing connection - use low voltage only e.g. contact protection relays or external protective earth</p>	closing	230 V AC; 100 VA; 1 A	230 V DC; 50 W; 0,5 A	Please take notice the contact protection!	opening	230 V AC; 100 VA; 1 A	230 V DC; 50 W; 0,5 A	change-over	230 V AC; 40 VA; 1 A	230 V DC; 20 W; 0,5 A
closing	230 V AC; 100 VA; 1 A	230 V DC; 50 W; 0,5 A	Please take notice the contact protection!								
opening	230 V AC; 100 VA; 1 A	230 V DC; 50 W; 0,5 A									
change-over	230 V AC; 40 VA; 1 A	230 V DC; 20 W; 0,5 A									
Orientation	vertical ± 30°										
Ingress protection	IP 65										

Float type	A Ø mm	B Ø mm	L1 min. mm	U min. mm	W min. mm	Distance between contacts	
						2 contacts 1 float mm	2 contacts 2 float mm
V44A	44	12 or 14	75	45	80	20	80
V52A	52	12 or 14	75	45	80	20	80
V62A	62	12 or 14	80	50	80	20	90
V83A	83	12 or 14	90	60	80	20	110

Connection diagrams page 32-33



## Design: Angular design - PVC or Polypropylene



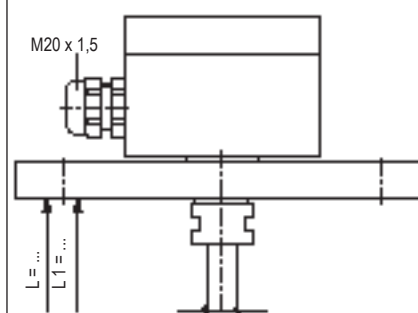
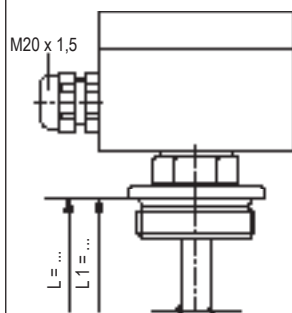
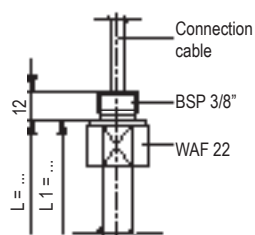
	ERP-3/8"-W..P.-L.../12-P44A-1...	ERPP-3/8"-W..PP.-L.../12-PP44A-1...
Electrical connection	Cable PVC-grey, PVC-blue, Silicone, PUR	
Process connection	Mounting thread BSP 3/8"	
Guide tube - Ø	12 mm	
Guide tube length max.	1000 mm	
Float	P44A	PP44A
Limit S.G. 85 %	see Tables page 30/31 (Floats)	
Limit S.G. 50 %	see Tables page 30/31 (Floats)	
Nominal pressure	see Tables page 30/31 (Floats)	
Temperature range	0 °C ... +60 °C	-10 °C ... +80 °C
Switch function	optional closing S, opening O or change-over SPDT U - on rising level	
Number of contacts	4 x S or O or 3 x U	
Switch rating	closing 230 V AC; 100 VA; 1 A opening 230 V AC; 100 VA; 1 A change-over 230 V AC; 40 VA; 1 A	230 V DC; 50 W; 0,5 A 230 V DC; 50 W; 0,5 A 230 V DC; 20 W; 0,5 A
Orientation	vertical ± 30°	
Ingress protection	IP 54	

Please take notice the contact protection!

Float type	A Ø mm	B Ø mm	L1 min. mm	U min. mm	W min. mm	Distance between contacts	
						2 contacts 1 float mm	2 contacts 2 float mm
P44A	44	12	80	40	70	50	80
PP44A	44	12	80	40	70	50	80

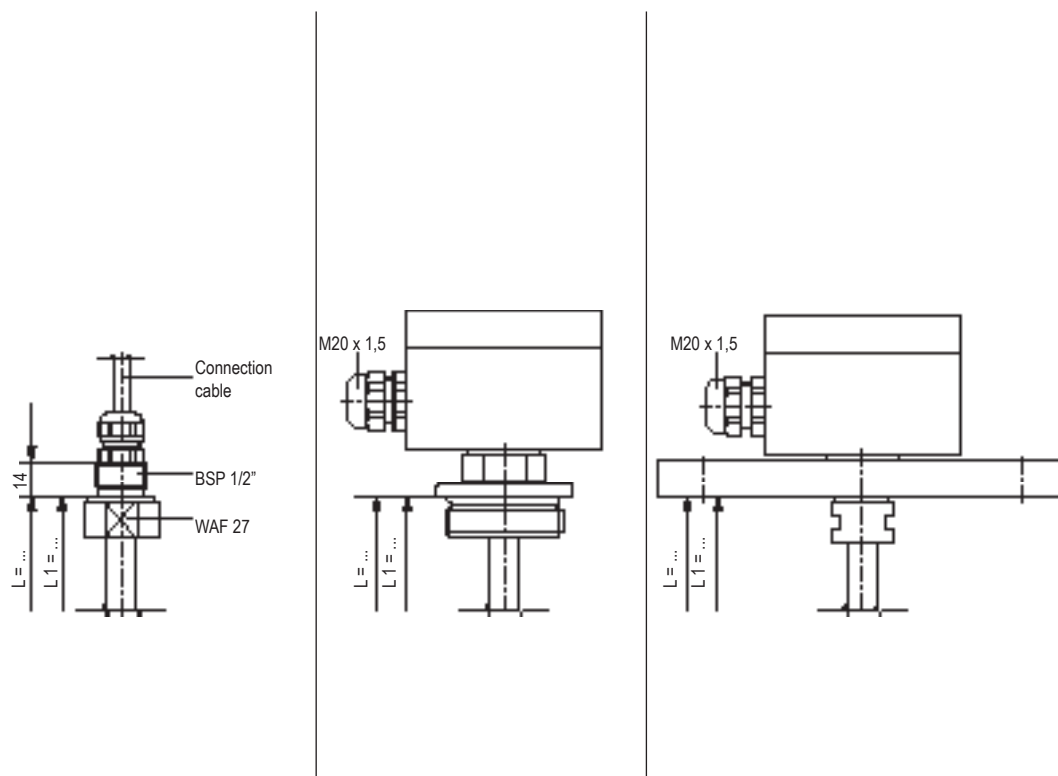
Connection diagrams page 32-33

# Design: PVC, Polypropylene, PVDF



PVC	ERP-3/8"-P.-L.../12-P44A-1...	ABRP-..."-P.-L.../12-P44A	ABFP-.../10-P. - L.../12-P44A
Polypropylene	ERPP-3/8"-PP.-L.../12-PP44A-1...	ABRPP-..."-PP.-L.../12-PP44A	ABFPP-.../10-PP.-L.../12-PP44A
PVDF	ERPF-3/8"-PF.-L.../12-PF44A-1...	ABRPF-..."-PF.-L.../12-PF44A	ABFPF-.../10-PF.-L.../12-PF44A
Electrical connection	Cable PVC-grey, PVC-blue, PUR		Terminal box Polypropylene 80 x 82 x 55 mm
Process connection	Mounting thread upwards BSP 3/8"	Mounting thread downwards BSP 1 1/2" or BSP 2"	Mounting flange DIN D N50 – DN 100 PN 10 Form A ANSI 2" - 4" Class 150 FF
Guide tube - Ø	12 mm		
Guide tube length max.	500 mm		
Float	PVC Polypropylene PVDF	P44A PP44A PF44A	
Limit S.G. 85 % Limit S.G. 50 % Nominal pressure	see Tables page 30/31 (Floats)		
Temperature range	PVC Polypropylene PVDF	0 °C ... +60 °C -10 °C ... +80 °C -10 °C ... +100 °C	
Switch function	optional closing S, opening O or change-over SPDT U - on rising level		
Number of contacts	4 x S or O (PP max.3) or 3 x U (PP max.2)		
Switch rating	closing opening change-over	230 V AC; 100 VA; 1 A 230 V AC; 100 VA; 1 A 230 V AC; 40 VA; 1 A	230 V DC; 50 W; 0,5 A 230 V DC; 50 W; 0,5 A 230 V DC; 20 W; 0,5 A  Please take notice the contact protection!
Orientation	vertical ± 30°		
Ingress protection	IP 54	IP 65	

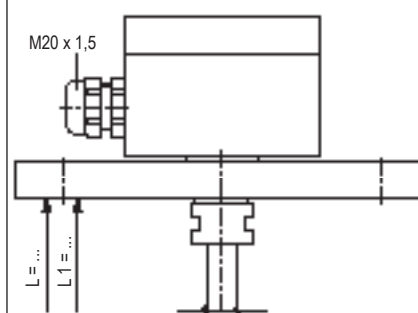
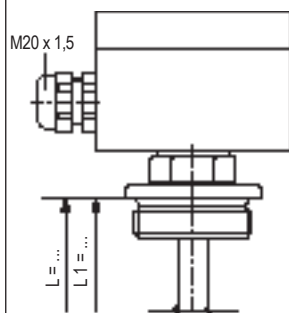
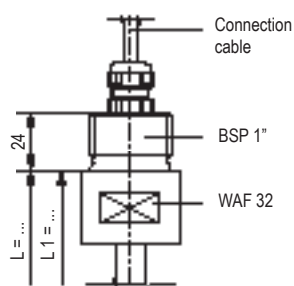
# Design: PVC, Polypropylene, PVDF



PVC	ERP-1/2"-P-L.../16-P55A-1...	APRP-2"-P-L.../16-P55A	APFP.../10-P-L.../16-P55A
Polypropylene	ERPP-1/2"-PP-L.../16-PP55A-1...	APRPP-2"-PP-L.../16-PP55A	APFPP.../10-PP-L.../16-PP55A
PVDF	ERPF-1/2"-PF-L.../16-PF55A-1...	APRPF-2"-PF-L.../16-PF55A	APFPF.../10-PF-L.../16-PF55A
Electrical connection	Cable PVC-grey, PVC-blue, PUR		Terminal box Polyester 80 x 75 x 55 mm
Process connection	Mounting thread upwards BSP 1/2"	Mounting thread downwards BSP 2"	Mounting flange DIN DN 65 – DN 125 PN 10 Form A ANSI 2 1/2" - 4" Class 150 FF
Guide tube - Ø	16 mm, reinforced with metal insert		
Guide tube length max.	3000 mm		
Float	PVC Polypropylene PVDF	P55A PP55A PF55A	
Limit S.G. 85 % Limit S.G. 50 % Nominal pressure	see Tables page 30/31 (Floats)		
Temperature range	PVC Polypropylene PVDF	0 °C ... +60 °C -10 °C ... +80 °C -10 °C ... +100 °C	
Switch function	optional closing S, opening O or change-over SPDT U - on rising level		
Number of contacts	6 x S or O or 4 x U		
Switch rating	closing opening change-over	230 V AC; 100 VA; 1 A 230 V AC; 100 VA; 1 A 230 V AC; 40 VA; 1 A	230 V DC; 50 W; 0,5 A 230 V DC; 50 W; 0,5 A 230 V DC; 20 W; 0,5 A
Orientation	vertical ± 30°		
Ingress protection	IP 65		

Please take notice the contact protection!

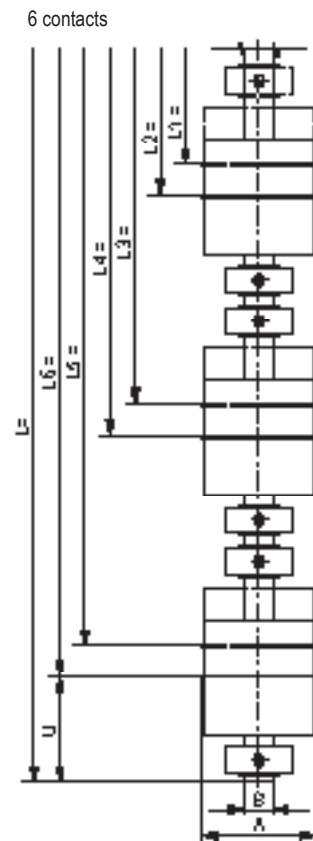
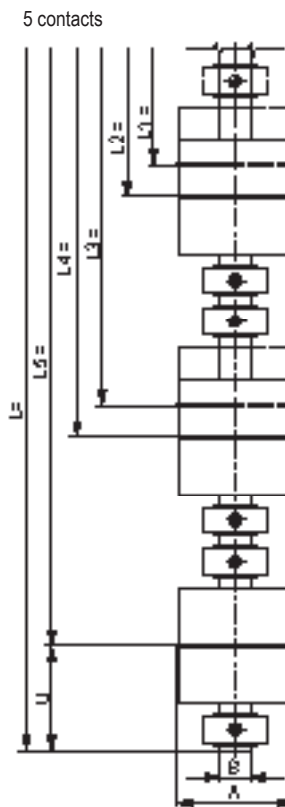
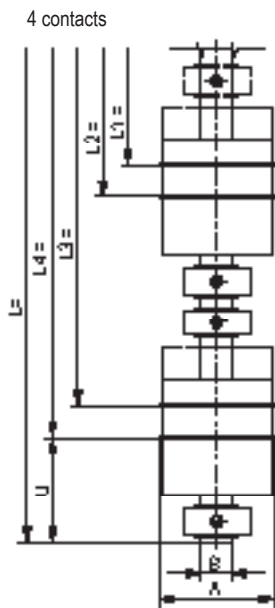
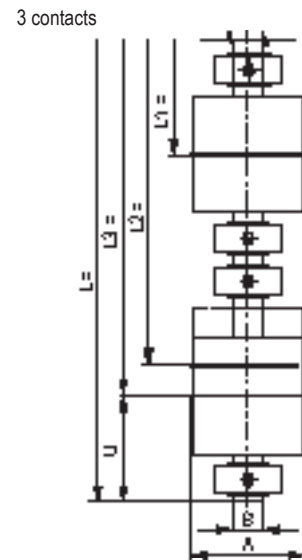
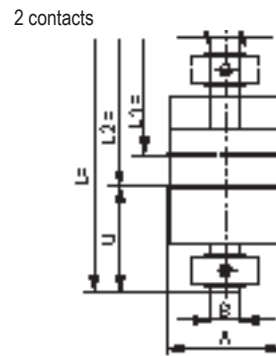
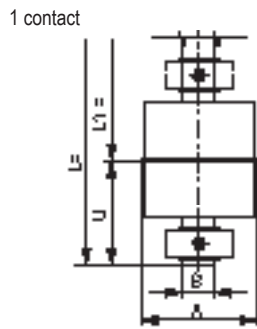
# Design: PVC, Polypropylene, PVDF



PVC	ERP-1"-P-L.../20-P..A-1...	APRP-2"-P-L.../20-P..A	APFP-.../10-P-L.../20-P..A
Polypropylene	ERPP-1"-PP-L.../20-PP..A-1...	APRPP-2"-PP-L.../20-PP..A	APFPP-.../10-PP-L.../20-PP..A
PVDF	ERPF-1"-PF-L.../20-PF..A-1...	APRPF-2"-PF-L.../20-PF..A	APFPF-.../10-PF-L.../20-PF..A
Electrical connection	Cable PVC-grey, PVC-blue, PUR		Terminal box Polyester 80 x 75 x 55 mm
Process connection	Mounting thread upwards BSP 1"	Mounting thread downwards BSP 2"	Mounting flange DIN DN 65 – DN 125 PN 10 Form A ANSI 2 1/2" - 5" Class 150 FF
Guide tube - Ø	20 mm, reinforced with metal insert		
Guide tube length	max. 5000 mm		
Float	PVC Polypropylene PVDF	P55A/26 or P80A PP55A/26 or PP80A PF55A/26 or PF80A	
Limit S.G. 85 % Limit S.G. 50 % Nominal pressure	see Tables page 30/31 (Floats)		
Temperature range	PVC Polypropylene PVDF	0 °C ... +60 °C -10 °C ... +80 °C -10 °C ... +100 °C	Please take notice the contact protection!
Switch function	optional closing S, opening O or change-over SPDT U - on rising level		
Number of contacts	6 x S or O or 4 x U		
Switch rating	closing opening change-over	230 V AC; 100 VA; 1 A 230 V AC; 100 VA; 1 A 230 V AC; 40 VA; 1 A	230 V DC; 50 W; 0,5 A 230 V DC; 50 W; 0,5 A 230 V DC; 20 W; 0,5 A
Orientation	vertical ± 30°		
Ingress protection	IP 65		

# Switchpoint Dimensions

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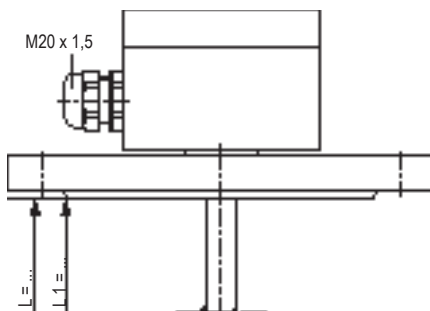


Float type			A Ø mm	B Ø mm	L1 min. mm	U min. mm	Distance between contacts	
							2 contacts 1 float mm	2 contacts 2 floats mm
P44A	PP44A		44	12	50	40	50	80
P55A	PP55A	PF55A	55	16	70	60	20	100
P80A	PP80A	PP80A	80	20	80	70	20	120

Connection diagrams page 32-33

Design: Stainless steel SS 316 Ti (1.4571), ECTFE-coated

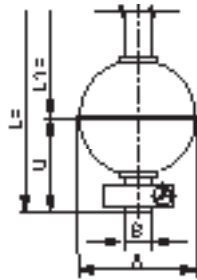
Option: anti-static



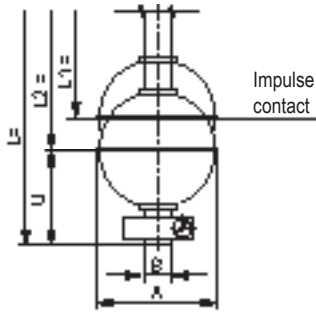
	AFVEC-.../...-VEC-L.../12-VEC..A	AFVEC-.../...-VEC-L.../18-VEC..A	
Electrical connection	Terminal box Aluminium 64 x 58 x 34 mm, with 1 contact, Aluminium 80 x 75 x 57 mm, 2 or more contacts Option Polypropylene, Polyester, Stainless steel		
Process connection	Mounting flange DIN DN 50 - DN 200 , PN 6 – PN 40, ANSI 2" - 8" , Class 150 - 300		
Guide tube - Ø	12 mm	18 mm	
Guide tube length max.	2000 mm	4000 mm	
Float	VEC45A, VEC53A, VEC63A, VEC84A	VEC81A, VEC99A, VEC106A, VEC121A	
Limit S.G. 85 %	see Tables page 30/31 (Floats)		
Limit S.G. 50 %	see Tables page 30/31 (Floats)		
Nominal pressure	depending on liquid		
Temperature range	depending on liquid		
Switch function	optional closing S, opening O or change-over SPDT U - on rising level		
Number of contacts	3 x S or O or 2 x U	6 x S or O or 4 x U	
Switch rating	closing 230 V AC; 100 VA; 1 A opening 230 V AC; 100 VA; 1 A change-over 230 V AC; 40 VA; 1 A	230 V DC; 50 W; 0,5 A 230 V DC; 50 W; 0,5 A 230 V DC; 20 W; 0,5 A	Please take notice the contact protection!
	Attention: Designs without earthing connection - use low voltage only e.g. contact protection relays (see catalogue 1011) or external protective earth		
Orientation	vertical ± 30°		
Ingress protection	IP 65		

# Switchpoint Dimensions

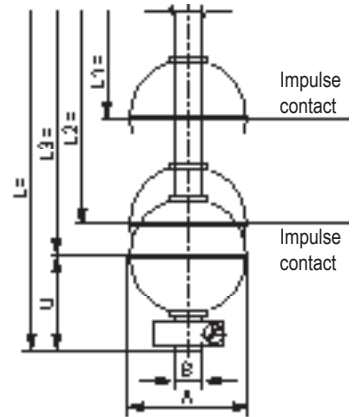
1 contact



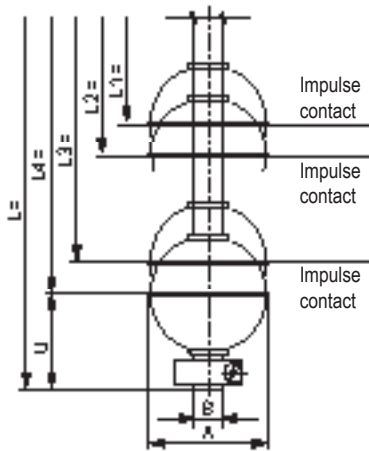
2 contacts



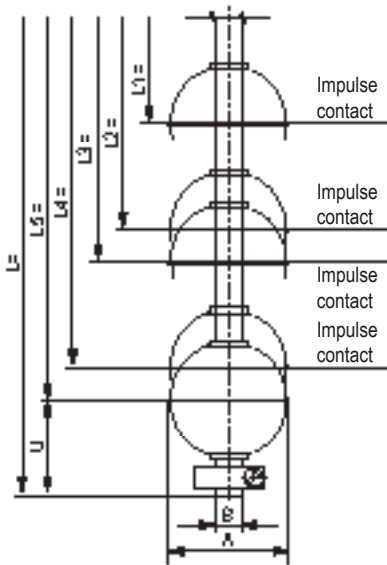
3 contacts



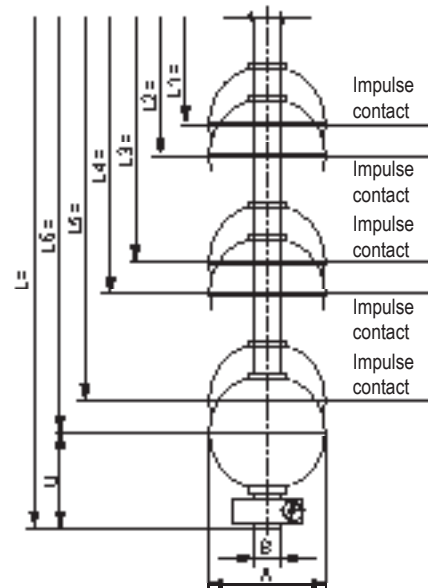
4 contacts



5 contacts



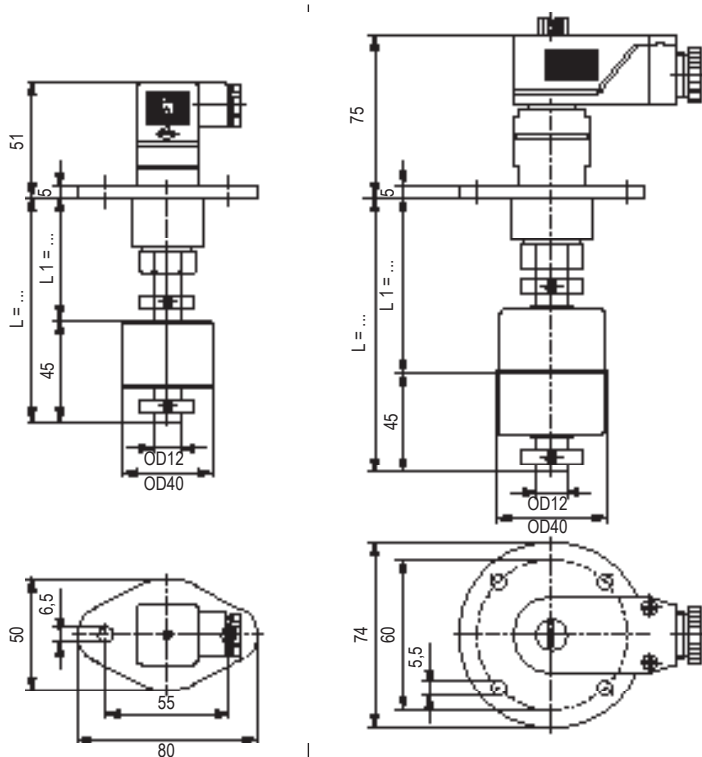
6 contacts



Float type	A Ø mm	B Ø mm	L1 min. mm	U min. mm	Distance between contacts 2 contacts mm
VEC45A	45	12	55	55	50
VEC53A	53	12	55	55	50
VEC63A	63	12	60	60	50
VEC84A	84	12	70	70	50
VEC81A	81	18	90	75	50
VEC99A	99	18	100	85	50
VEC106A	106	18	105	90	50
VEC121A	121	18	115	100	50

Connection diagrams page 32-33

## Design: Special flange design - Stainless steel SS 316 Ti (1.4571)

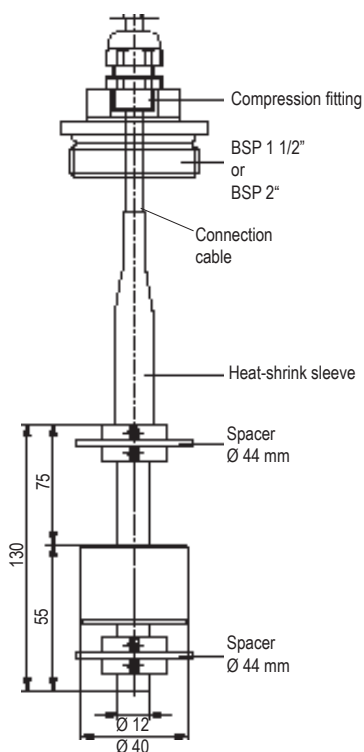


	ASC4FPA-V-L.../12-B40A	ASC..FM-V..L.../12-V44A
Electrical connection	Coupler plug C164-232F-4P	Coupler plug C164-332-F-5P Coupler plug C164-4337-F-7P
Process connection	Oval flange, Polyamide	Brass flange
Guide tube - Ø	12 mm	
Guide tube length max.	3000 mm	
Float	B40A	V44A
Limit S.G. 85 % Limit S.G. 50 % Nominal pressure	see Tables page 30/31 (Floats)	
Temperature range	0 °C ... +60 °C	-10 °C ... +80 °C
Switch function	optional closing S, opening O or change-over SPDT U - on rising level	
Number of contacts	2 x S or O or 1 x U	3 x S or O or 2 x U
Switch rating	closing 230 V AC; 100 VA; 1 A opening 230 V AC; 100 VA; 1 A change-over 230 V AC; 40 VA; 1 A	230 V DC; 50 W; 0,5 A 230 V DC; 50 W; 0,5 A 230 V DC; 20 W; 0,5 A
Orientation	vertical ± 30°	
Ingress protection	IP 65	
	Connection diagrams page 32-33	

Please take notice the contact protection!



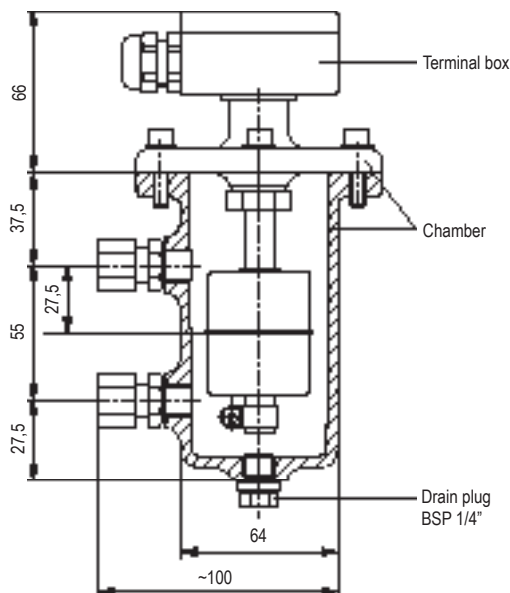
## Design: Stainless steel SS 316 Ti (1.4571) - Buna float



	HV.-L130-B40A-3ÖI		
Electrical connection	Cable 3 m PUR		
Process connection	Compression fitting PG 9, Option: mounting thread BSP 1 1/2" or BSP 2" Polypropylene		
Guide tube - Ø	12 mm		
Guide tube length	130 mm		
Float	B40A Option: V44A		
Nominal pressure	atmospheric		
Temperature range	-10 °C ... +60 °C		
Switch function	optional closing S, opening O or change-over SPDT U - on rising level		
Number of contacts	1		
Switch rating	48 V AC; 20 VA; 0,4 A	48 V DC, 10 W; 0,2 A	Please take notice the contact protection!
Orientation	vertical		
Ingress protection	IP 68		
	Connection diagrams page 32-33		

## Technical Data: Bypass Float Switches

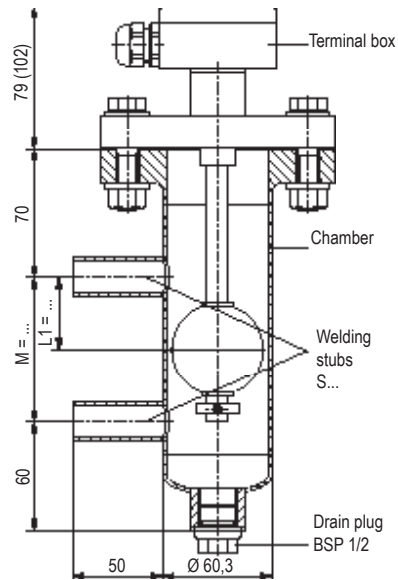
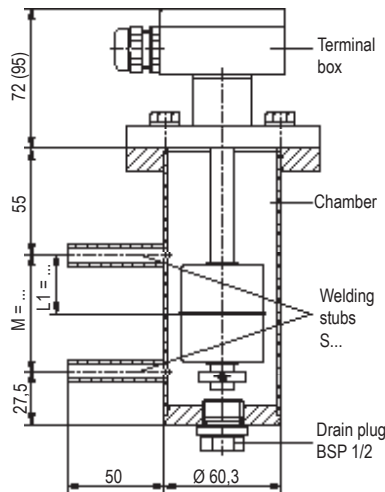
Design: Chamber Aluminium or Bronze



	ABAU	ABRU	
Chamber	Aluminium AlMg5	Bronze Rg5	
Nominal pressure (Chamber)	max. 1 bar	max. 6 bar	
Process connection	Compression fitting GE 10 - LR, Carbon steel, Zinc coated		
Distance centre-to-centre	55 mm		
Electrical connection	Terminal box, Aluminium 64 x 58 x 34 mm		
Guide tube - Ø	12 mm Stainless steel SS 316 Ti (1.4571)		
Float	V44A		
Limit S.G. 85 %	see Tables page 30/31 (Floats)		
Limit S.G. 50 %			
Temperature range	-30 °C ... +150 °C		
Switch function	1 change-over SPDT (U)		
Switch rating	230 V AC, 40 VA, 1 A	230 V DC, 20 W, 0,5 A	Please take notice the contact protection!
Orientation	vertical ± 30°		
Ingress protection	IP 65		

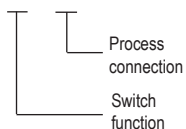
# Technical Data: Bypass Float Switches

## Design: Chamber Stainless steel SS 316 Ti (1.4571)

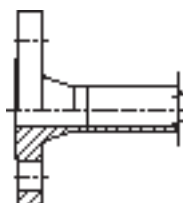


A-BV...-...-M...		A-BV...-...-M...-TRB Pressure Equipment Directive 97/23/EC	
Chamber	Stainless steel SS 316 Ti (1.4571)		
Nominal pressure (Chamber)	0,5 bar	10 bar with process flange PN 16	40 bar with process flange PN 40
Process connection	S... = welding stubs OD Ø F.../.../... = flanges acc. to DIN or ANSI GM... = threaded stubs, female GN... = threaded stubs, male		
Distance centre-to-centre	M	= 80 mm ... 1000 mm	
Electrical connection	Terminal box Aluminium 64 x 58 x 34 mm, with 1 contact Aluminium 80 x 75 x 57 mm, 2 or more contacts		
Guide tube - Ø	12 mm oder 14 mm		
Float	V44A	V52A	
Limit S.G. 85 % Limit S.G. 50 %	see Tables page 30/31 (Floats)		
Temp. range standard	-30 °C ... +150 °C		Please take notice page 29
High temperature (HT..)	(HT..) +150 °C ... +300 °C		
Switch function	optional closing S, opening O or change-over SPDT U - on rising level		
Number of contacts	6 x S or O or 4 x U depending on distance centre-to-centre M....		
Switch rating	closing 230 V AC; 100 VA; 1 A opening 230 V AC; 100 VA; 1 A change-over 230 V AC; 40 VA; 1 A		230 V DC; 50 W; 0,5 A 230 V DC; 50 W; 0,5 A 230 V DC; 20 W; 0,5 A Please take notice the contact protection!
Orientation	vertical ± 30°		
Ingress protection	IP 65		

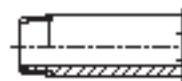
A - BV... - ... - M... - ...



Flange connection  
F.../.../...



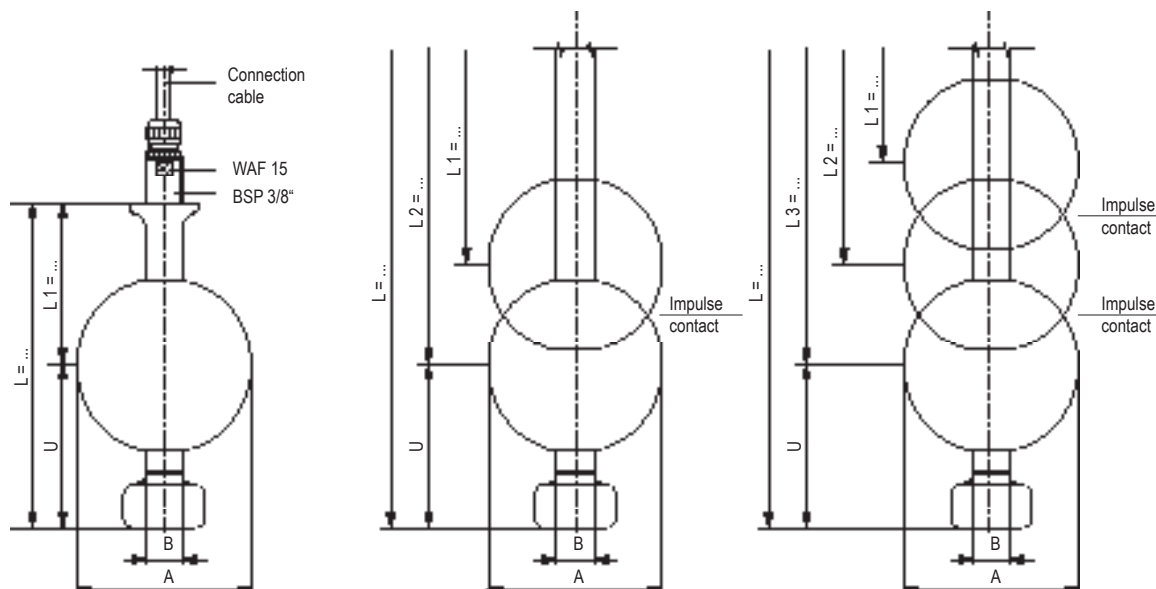
Male thread  
GN...



Female thread  
GM...



## Design: Sanitary design - Stainless steel SS 316 L



### ERV-3/8"-V-L.../17-V80A/3A/...-1...

Electrical connection	Cable PVC-grey, PVC-blue, Silicone, PUR Option Terminal box										
Process connection	Mounting thread upwards BSP 3/8" Option Mounting flange acc. to DIN or ANSI Dairy fitting acc. to DIN 11851 Clamp connection acc. to DIN 32676 Sanitary nozzle (Ingoldstutzen)										
Guide tube - Ø	17,2 mm Stainless steel SS 316 L (1.4435) or 1.4539 - ground and polished										
Guide tube length max.	5000 mm										
Float	V80A/3A... Stainless steel SS 316 L (1.4435) or 1.4539 - ground and polished										
Limit S.G. 85 %	715 kg/m <sup>3</sup>										
Limit S.G. 50 %	1220 kg/m <sup>3</sup>										
Nominal pressure	25 bar										
Temperature range	PVC and PUR cable -10 °C ... +80 °C, Silicone cable -30 °C ... +150 °C										
Switch function	optional closing S, opening O or change-over SPDT U - on rising level										
Number of contacts	PVC cable 6 x S or O or 4 x U, Silicone cable 3 x S or O or 2 x U										
Switch rating	<table border="0"> <tr> <td>closing</td> <td>230 V AC; 100 VA; 1 A</td> <td>230 V DC; 50 W; 0,5 A</td> <td rowspan="3">Please take notice the contact protection!</td> </tr> <tr> <td>opening</td> <td>230 V AC; 100 VA; 1 A</td> <td>230 V DC; 50 W; 0,5 A</td> </tr> <tr> <td>change-over</td> <td>230 V AC; 40 VA; 1 A</td> <td>230 V DC; 20 W; 0,5 A</td> </tr> </table>	closing	230 V AC; 100 VA; 1 A	230 V DC; 50 W; 0,5 A	Please take notice the contact protection!	opening	230 V AC; 100 VA; 1 A	230 V DC; 50 W; 0,5 A	change-over	230 V AC; 40 VA; 1 A	230 V DC; 20 W; 0,5 A
closing	230 V AC; 100 VA; 1 A	230 V DC; 50 W; 0,5 A	Please take notice the contact protection!								
opening	230 V AC; 100 VA; 1 A	230 V DC; 50 W; 0,5 A									
change-over	230 V AC; 40 VA; 1 A	230 V DC; 20 W; 0,5 A									
Attention: Designs without earthing connection - use low voltage only e.g. contact protection relays (see catalogue 1011) or external protective earth											
Orientation	vertical ± 30°										
Ingress protection	IP 65										

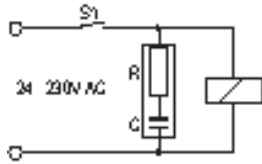
Float type	A	B	L1	U	Distance between contacts
	Ø	Ø	min.	min.	2 contacts
	mm	mm	mm	mm	mm
V80A/3A	80	17,2	90	85	50

Connection diagrams page 32-33

# Contact Protection Measures

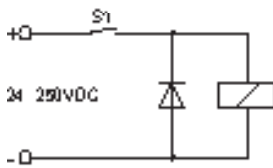
To ensure reliable operation and highest possible service life, we recommend using one of the following circuits.

## Inductive load AC



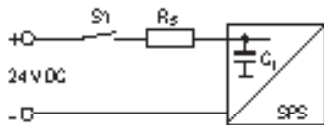
RC-modules  
acc. to table

## Inductive load DC



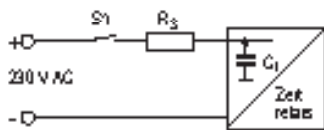
Shunt diode  
e. g. 1N4007

## Current limitation with capacitive load e.g. PLC and cables >50m



$R_s = 22 \text{ Ohm}$   
(47 Ohm with  
10 VA contacts)  
 $C_1 =$  internal capacitance

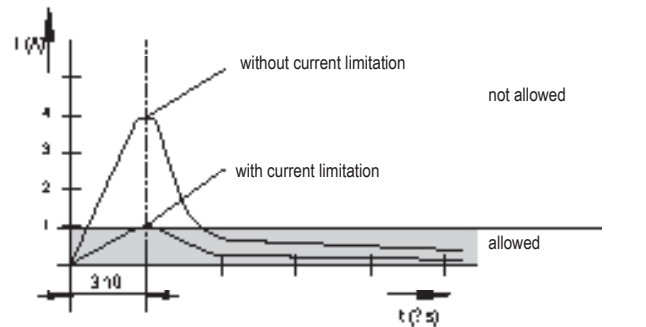
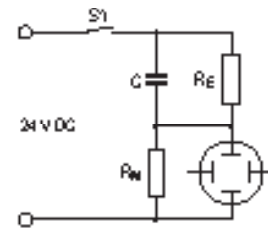
## Current limitation with electronic timers



$R_s = 220 \text{ Ohm } \Omega$   
(230 V AC)  
 $C_1 =$  internal capacitance

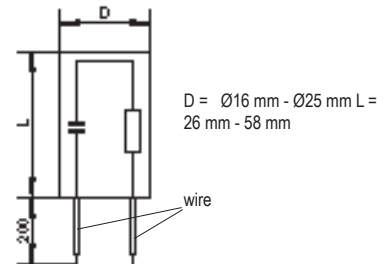
## Current measurement with oscilloscope

Example:  
 $C = 0.33 \mu\text{F}/24\text{V DC}$



## Protective RC-modules

Please use RC-modules according to the table below. Rating of the switches and supply voltage will determine the type to be used.



### For reed contacts 10-40VA

Capacitance	Resistance	Voltage	Type
0,33µF	100 Ohm	24V AC	A 3/24
0,33µF	220 Ohm	48V AC	A 3/48
0,33µF	470 Ohm	115V AC	A 3/115
0,33µF	1500 Ohm	230V AC	A 3/230

### For reed contacts 40-100VA

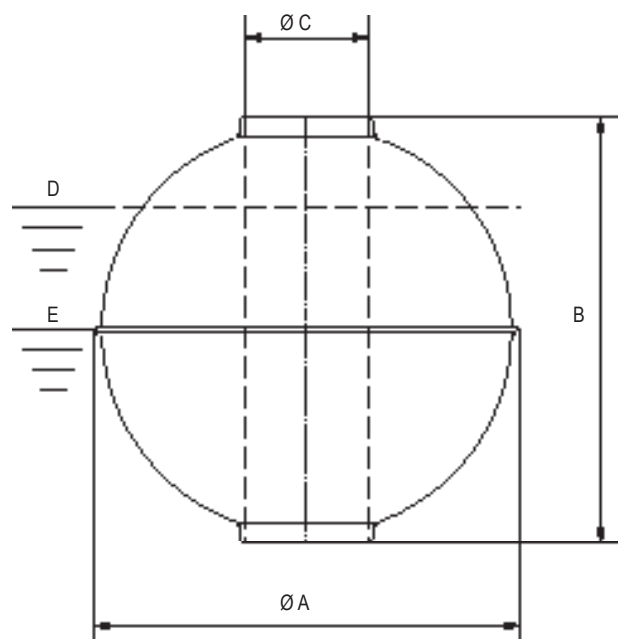
Capacitance	Resistance	Voltage	Type
0,33µF	47 Ohm	24V AC	B 3/24
0,33µF	100 Ohm	48V AC	B 3/48
0,33µF	470 Ohm	115V AC	B 3/115
0,33µF	1000 Ohm	230V AC	B 3/230

Others types might lead to destruction or lower service life of the reed contacts.

## Remarks for high and low temperature design

Contact function	optional closing (S) or opening (O) on rising level		
max. number of contacts	2,1 float per contact, distance L1 - L2 according float size		
Switching capacity	closing or opening	48V AC; 20VA; 0.4A	48V DC; 10W; 0.2A

## Spherical floats (K)

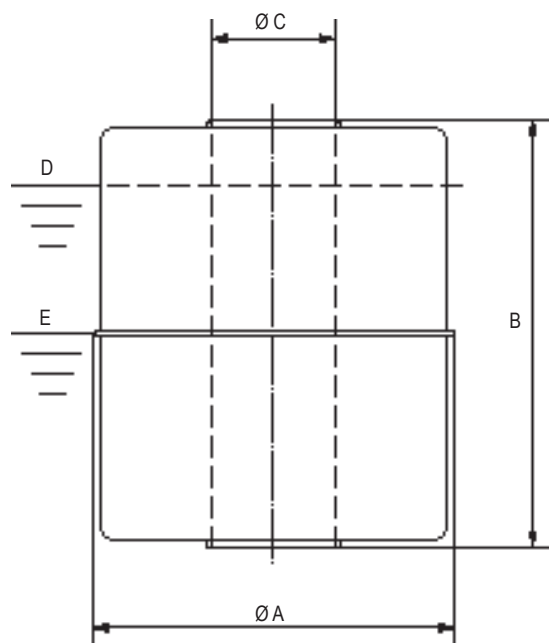


D = Limit S.G.  
at 85 % immersed float

E = Nominal S.G.  
at 50 % immersed float

Material	Type Code 6	A Ø mm	B mm	C Ø mm	Max. operating pressure bar	Max. operating temperature °C	Weight g	Volume cm <sup>3</sup>	Limit S.G. (D) 85 % kg/m <sup>3</sup>	Nominal S.G. (E) 50 % kg/m <sup>3</sup>
Stainless steel SS 316 Ti	V29A/0,15	29	28	9	6	100	7	8	977	1660
	V29A/0,2	29	28	9	25	100	8	8	1069	1817
	V52A	52	52	15	40	300	37	57	769	1307
	V62A	62	61	15	32	300	52	102	597	1015
	V83A	83	81	15	25	300	88	254	408	693
	V80A	80	76	23	25	300	114,5	198	679	1155
	V98A	98	96	23	25	300	215	423	597	1016
	V105A	105	103	23	25	300	240	529	533	907
	V120A	120	117	23	25	300	268	811	389	661
Titanium Grade 2 (3.7035)	T29A	29	28	9	30	100	6	8	822	1397
	T52A	52	52	15	25	300	34	57	707	1201
	T52A/0,6	52	52	15	60	300	41	57	852	1448
	T52A/0,8	52	52	15	80	300	51	57	1060	1802
	T62A	62	62	15	25	300	44	102	505	859
	T83A	83	81	15	25	300	60	254	278	473
	T80A	80	76	23	25	300	112	198	665	1130
	T98A	98	96	23	25	300	178	423	495	841
	T105A	105	103	23	25	300	166	529	369	627
T120A	120	117	23	25	300	227	811	329	560	
Stainless steel SS 316 Ti E-CTFE-coated	VEC53A	53	53	14	25	dep. on liquid	39	62	745	1266
	VEC63A	63	62	14	25	dep. on liquid	55	109	591	1005
	VEC84A	84	82	14	25	dep. on liquid	91	266	403	685
	VEC81A	81	77	22	25	dep. on liquid	128	210	718	1220
	VEC99A	99	97	22	25	dep. on liquid	245	427	675	1148
	VEC106A	106	104	22	25	dep. on liquid	278	517	633	1076
	VEC121A	121	118	22	25	dep. on liquid	310	794	459	781

## Cylindrical floats (Z)



D = Limit S.G.  
at 85 % immersed float

E = Nominal S.G.  
at 50 % immersed float

Material	Type Code 6	A Ø mm	B mm	C Ø mm	Max. operating pressure bar	Max. operating temperature °C	Weight g	Volume cm <sup>3</sup>	Limit S.G. (D) 85 % kg/m <sup>3</sup>	Nominal S.G. (E) 50 % kg/m <sup>3</sup>
Stainless steel SS 316 Ti	V27A	27	31	10	16	100	8	12	787	1338
	V44A	44	52	15	16	300	42	60	818	1390
Titanium Grade 2 (3.7035)	T44A	44	52	15	16	300	37	60	720	1224
Buna	B20A	20	20	9	3	80	4	5	939	1597
	B23A	23	25	9	3	80	6	9	802	1364
	B25A	25	14	9	3	80	4	6	787	1337
	B30A	30	45	13	3	80	15	26	683	1161
	B40A	40	30	15	3	80	16	32	581	988
	B40A/120	40	120	15	3	80	45	130	409	694
	B50A	50	45	19	3	80	32	76	498	847
PVC	P44A	44	44	14	3	60	30	54	651	1107
	P55A	55	54	22	3	60	70	103	798	1357
	P55A/26	55	80	26	3	60	110	141	919	1563
	P55A/70	55	70	22	3	60	80	140	674	1145
	P80A	80	79	25	3	60	165	339	573	974
Polypropylene	PP27A	27	29	9	3	80	9	14	755	1284
	PP35A	35	33	9	3	80	15	26	675	1148
	PP44A	44	44	14	3	80	22	54	478	812
	PP55A	55	54	22	3	80	51	103	582	989
	PP55A/26	55	80	26	3	80	80	141	669	1137
	PP80A	80	79	25	3	80	124	339	431	732
PVDF	PF44A	44	55	14	3	100	45	68	782	1329
	PF55A	55	69	22	3	100	92	132	821	1396
	PF55A/26	55	80	26	3	100	143	148	1140	1938
	PF80A	80	79	25	3	100	196	339	681	1157
Stainless steel SS 316 Ti (1.4571) ECTFE-coated	VEC45A	45	53	14	16	dep. on liquid	44	66	782	1329

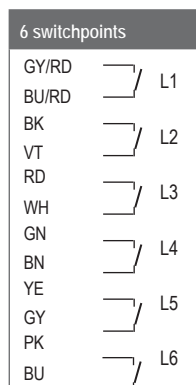
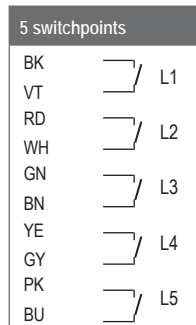
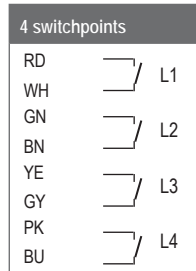
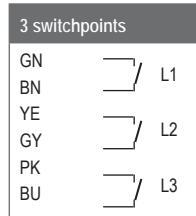
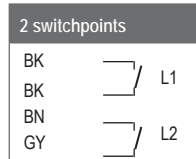
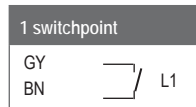
# Connection Diagrams

## Colour coding to IEC 757

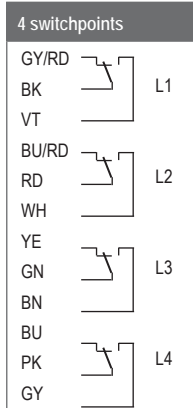
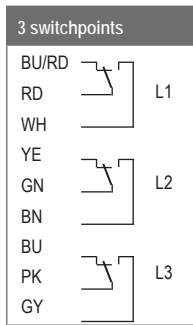
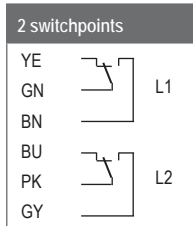
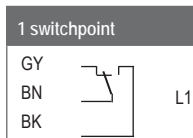
PVC cable

max. temperature 90 °C

opening  
or closing



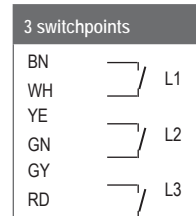
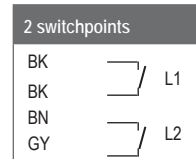
change-over



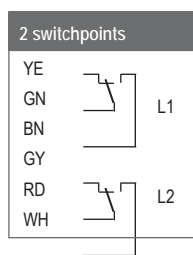
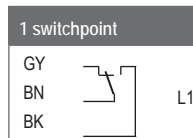
Silicone cable

max. temperature 150 °C

opening  
or closing



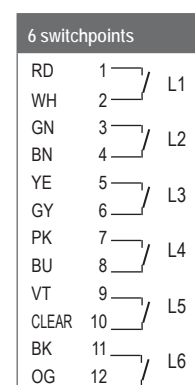
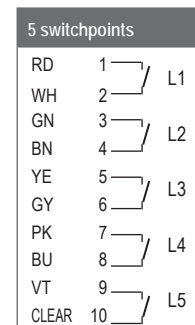
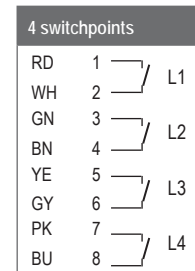
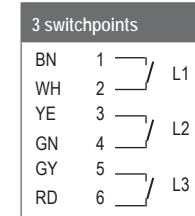
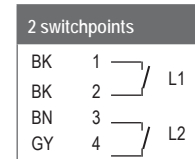
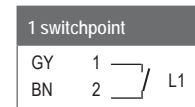
change-over



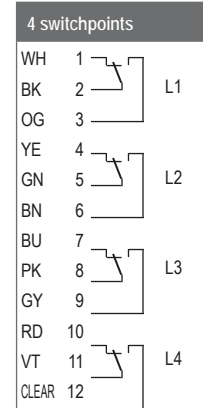
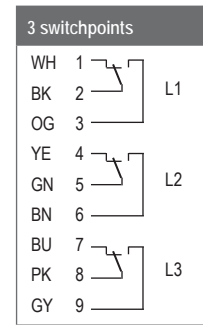
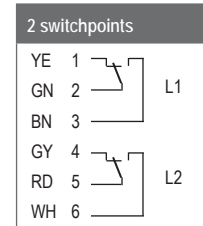
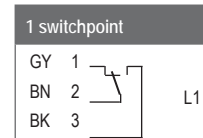
Terminal box

max. temperature 260 °C

opening  
or closing



change-over



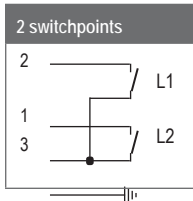
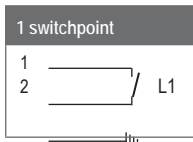


# Connection Diagrams

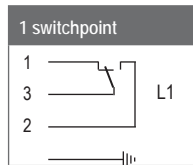
## Colour coding to IEC 757

### Coupler plug ASC4

opening or closing

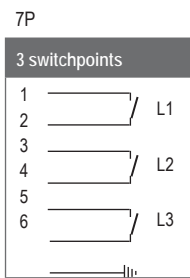
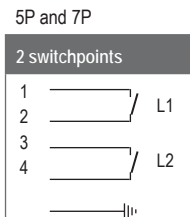
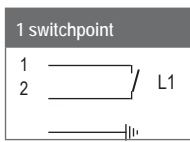


change-over SPDT

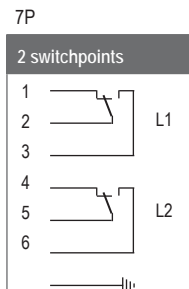
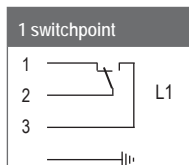


### Coupler plug ASC..

opening or closing

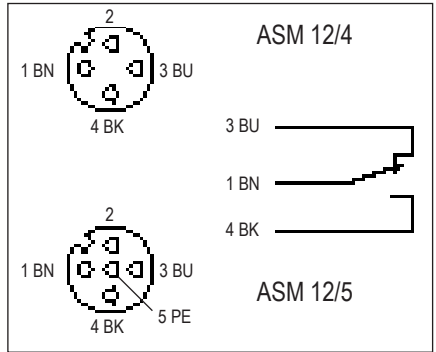


change-over SPDT



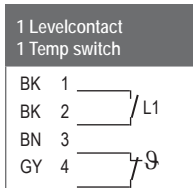
### Coupler plug ASH

opening or closing

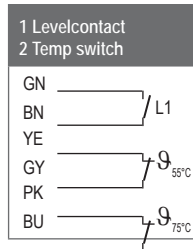


## Magnetic Float Switches with temperature switches

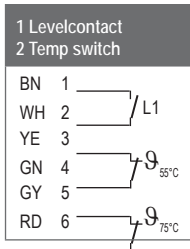
PVC or Silicone cable or Terminal box



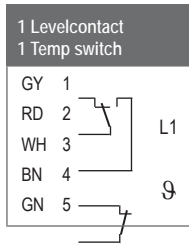
PVC cable



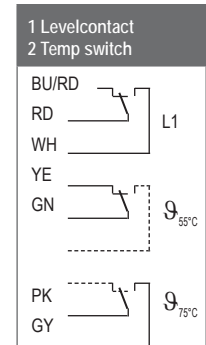
Silicone cable or Terminal box



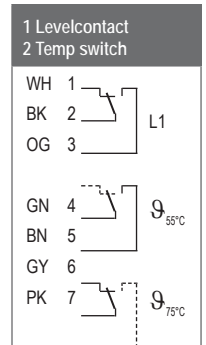
PVC or Silicone cable or Terminal box



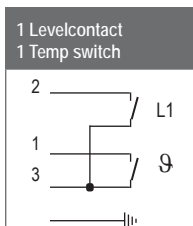
PVC cable



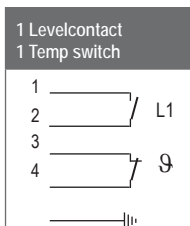
Terminal box



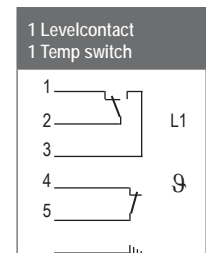
Coupler plug ASC4



Coupler plug ASC.. or ASH



Coupler plug ASC.. or ASH







Modifications may take place and materials specified may be replaced by others without prior notice.  
Specifications and dimensions given in this leaflet represent the state of engineering at the time of printing.



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