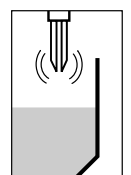
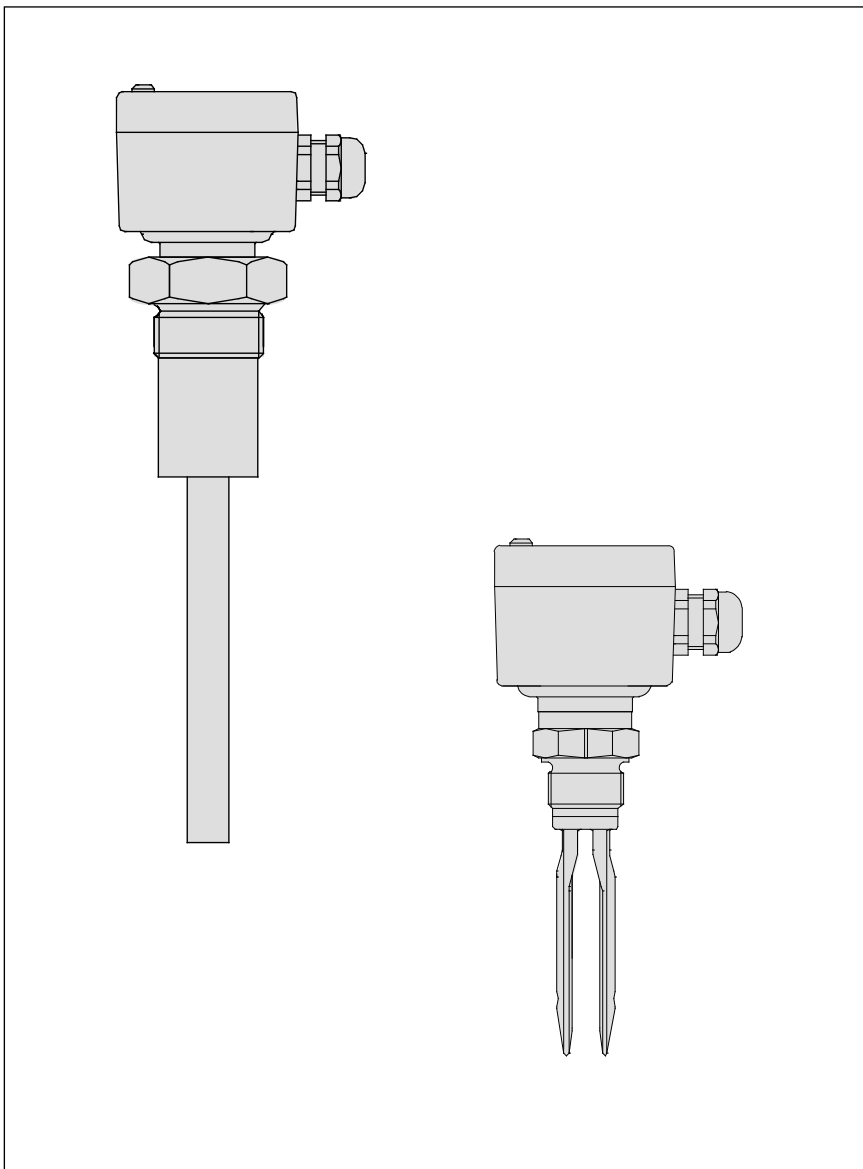


Product Information

Vibrating level switches



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1 Product description

VEGAVIB and VEGASWING vibrating level switches detect levels of solids and liquids.

VEGAVIB vibrating probe is used for detection of solids and VEGASWING tuning fork for detection of liquids. Typical applications are overfill protection and protection against dry running of pumps. Vibrating level switches are available as compact instruments, i.e. with integral processing or for connection to a remote signal conditioning instrument.

1.1 VEGAVIB

Vibrating level switches for detection of solids

VEGAVIB vibrating level switches detect levels of powders and granulated solids with a minimum density of $\geq 0,03 \text{ g/cm}^3$.

- rod version best suited for solids
- set-up without adjustment
- individual installation position
- plug-in oscillators
- solid detection in liquids (interface)
- min. or max. control selectable
- operating temperature from -40°C to $+150^\circ\text{C}$
- operating pressure up to 10 bar
- switching condition visible through cover
- protection IP 66
- approved to StEx Zone 10, CENELEC EEx ia IIC
- suitable for foodstuffs

Typical products are e.g. gypsum, cement, cereals, flour, styropor, chalk, paper scraps, washing powder, plastic granules etc.

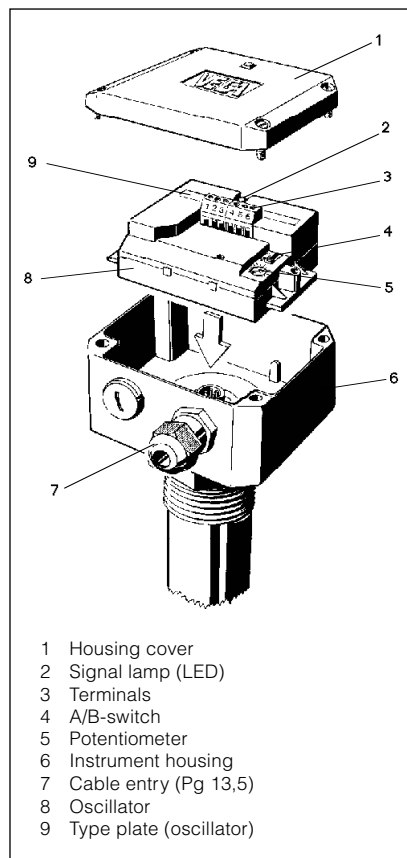


Fig. 1.1 VEGAVIB

1.2 VEGASWING

Vibrating level switches for detection of liquids

VEGASWING vibrating level switches detect liquid levels with a viscosity of $0,2 \dots 10.000 \text{ mPa s}$ and a density of $\geq 0,5 \text{ g/cm}^3$. Due to their modular construction, installation in vessels, tanks and pipelines is possible. Typical applications are overfill protection and protection against dry running of pumps.

Due to the simple and rugged measuring system VEGASWING can be used unaffected by the chemical and physical features of the liquid. VEGASWING functions even under arduous measuring conditions such as turbulence, bubbles, foam generation, build-up or varying product.

- integral fault monitoring
- fixed, exact reproducible switch point
- switching condition visible through cover
- unaffected by adhesions due to large gaps
- unaffected by external vibrations
- set-up without adjustment
- compact
- individual installation position
- min. or max. control selectable
- operating pressure up to 25 bar

VEGASWING series 70

VEGASWING 70 vibrating level switch especially for limited space applications.

- PNP/NPN-transistor output selectable on the oscillator
- permanently short-circuit proof and overload resistant
- protection IP 67
- simple electrical connection by plug connector

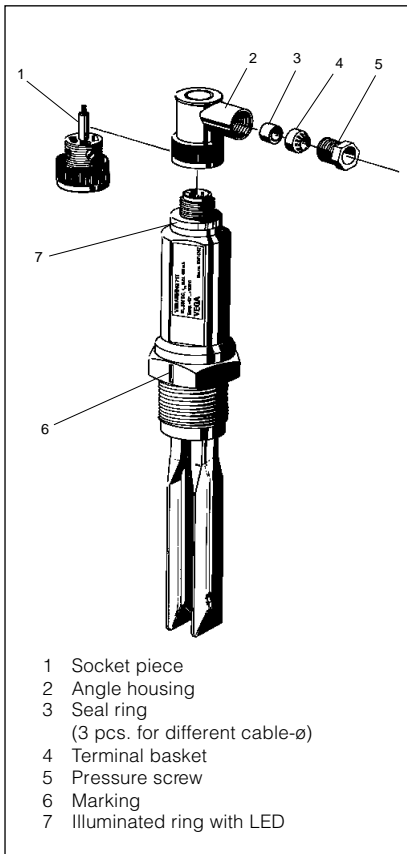


Fig. 1.3 VEGASWING 71

VEGASWING series 80

- four different oscillators
 - relay output
 - non-contact switch
 - transistor output
 - two-wire output
- all standard mechanical connections possible, e.g. thread, flange, hygienic connections etc.
- high resistance even against aggressive products by suitable materials, such as e.g. enamel
- operating temperature from -40°C to +150°C
- protection IP 66
- approved to PTB Zone 0 EEx ia IIC T6, CENELEC EEx ia IIC T6, WHG and VbF
- suitable for foodstuffs

For use in very aggressive products, VEGASWING 81 F... with ECTFE (Halar), Hastelloy or enamel or VEGASWING 83 F... with enamel or Halar up to 1200 mm or Säkaphen and Hastelloy C4.

For product temperatures up to 150°C VEGASWING 80 can be equipped with a temperature adapter.

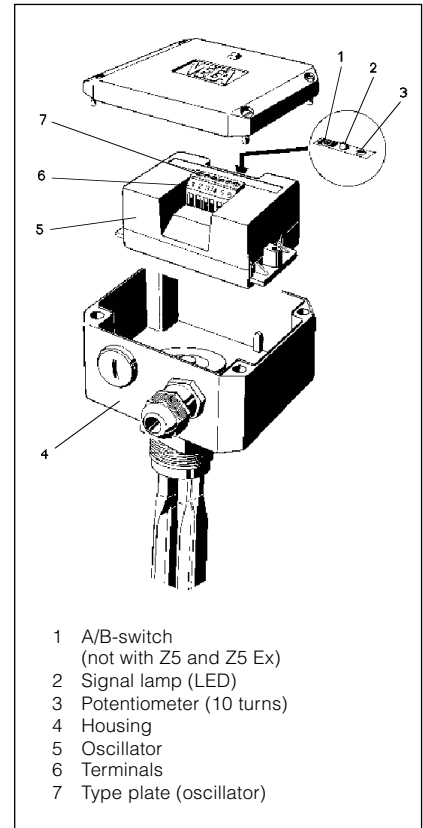


Fig. 1.2 VEGASWING 81

2 Function and application

2.1 Functional principle

VEGAVIB and VEGASWING vibrating level switches detect levels of virtually all products, either liquid, powder, granules or pasty.

Measuring principle VEGAVIB

The vibrating probe is piezoelectrically energized and vibrates at its mechanical frequency of approx. 530 Hz (VEGAVIB 41 and 43) or 350 Hz (VEGAVIB 51, 52 and 53). When the product touches the vibrating probe, the vibrating amplitude is damped. An integral electronics detects this damping and triggers a switching command.

Measuring principle VEGASWING

The tuning fork is piezoelectrically energized and vibrates at its mechanical frequency of approx. 400 Hz. A second piezoelectrical element transfers this frequency to the electronics of the tuning fork. When the tuning fork is covered by the product, the frequency changes. This change is detected by the integral oscillator and converted into a switching command.

The integral fault monitoring detects:

- break of the connection line to the piezoelements
- extreme build-up on the tuning fork
- break of the tuning fork
- no vibration.

If one of the stated failures is determined or in case of voltage failure, the electronics takes a defined switching condition, i.e. acc. to the electronics version

- the non-contact switch opens
- the relay de-energizes
- the output resistor blocks.

With the two-wire output version the failure is signalled via a defined current to the connected signal conditioning instrument VEGATOR.

Compact instruments

All vibrating level switches are available as compact instruments, i.e. all instruments can be operated without external processing. The integral electronics processes the level signal and provides acc. to the mounted oscillator an output signal. With this output signal a connected instrument can be directly operated (e.g. a warning system, a DCS, a pump etc.).

The installation of the following oscillators makes a compact instrument out of the vibrating level switch

- non-contact switch (C)
- relay output (R)
- transistor output (T).

Vibrating level switch with signal conditioning instrument

An oscillator Z (two-wire output) can be mounted in VEGAVIB series 50 and VEGASWING series 80. Hence the vibrating level switches can be connected to a signal conditioning instrument. Acc. to the requirements, the following signal conditioning instruments are possible:

- VEGATOR 425 Ex F
- VEGATOR 525 F
- VEGATOR 534 Ex
- VEGATOR 536 Ex
- VEGATOR 537 Ex
- VEGATOR 636 Ex
- VEGATOR 825 Ex.

2.2 Measuring system

A measuring system with one vibrating level switch can be realized in two ways.

Level detection for solids with compact instrument

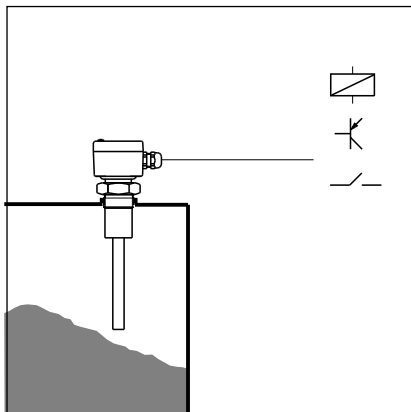


Fig.. 2.1 Measuring system with VEGAVIB as compact instrument

- A measuring system consists of:
- a VEGAVIB vibrating level switch with integral oscillator
 - connected instruments operated with VEGAVIB.

Level detection for solids with signal conditioning instrument

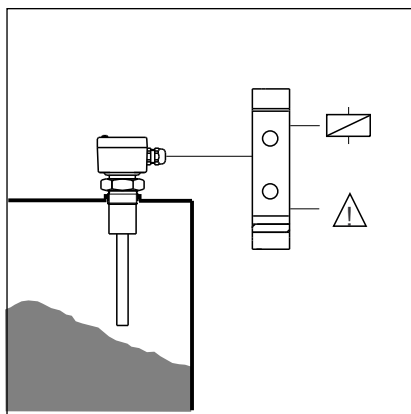


Fig. 2.2 Measuring system with VEGAVIB with separate processing

- A measuring system consists of:
- a VEGAVIB vibrating level switch with integral oscillator
 - a VEGATOR level switch or VEGALOG processing system.

Level detection for liquids with compact instrument

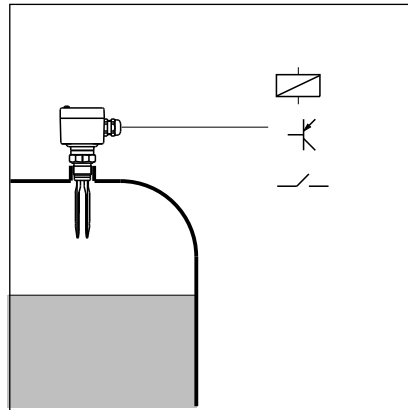


Fig. 2.3 Measuring system with VEGASWING as compact instrument

- A measuring system consists of:
- a VEGASWING vibrating level switch with integral oscillator
 - connected instruments operated with VEGASWING.

Level detection for liquids with signal conditioning instrument

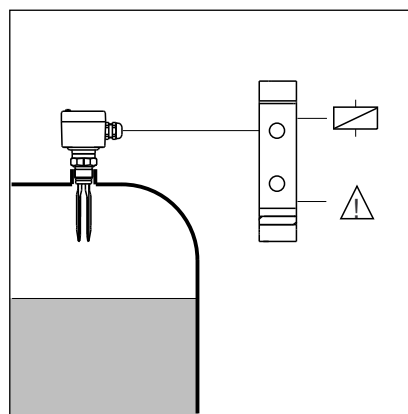


Fig. 2.4 Measuring system with VEGASWING with separate processing

- A measuring system consists of:
- a VEGASWING vibrating level switch with integral oscillator
 - a VEGATOR level switch or VEGALOG processing system.

3 Types and versions

3.1 Vibrating level switches overview

Version	Type	VEGAVIB					VEGASWING			
		41	43	51	52	53	71	81	82	83
Standard (fixed installation length)		•		•			•	•		
Suspension cable version						•				•
Tube version			•			•				•
Approvals										
CENELEC EEx ia IIC T6				•	•	•		•		•
PTB-Zone 0 EEx ia IIC T6								•		•
StEx Zone 10				•	•	•				
Overfill protection to WHG								•		•
Overfill protection to VbF								•		•
Mechanical connection										
G 1 A		•	•				•	•	•	•
NPT 1"		•	•				•	•		•
G 1½ A				•	•	•				
NPT 1½"				•	•	•				
Flange from DN 50, ANSI 2"								•		•
Tri-Clamp 1,5"								•		•
Tri-Clamp 2"								•		•
Cone DN 25								•		•
Bolting DN 40							•		•	
Bolting DN 50							•		•	
Material, mechanical connection										
Plastic				•	•					
StSt (1.4571)		•	•				•	•	•	•
StSt (1.4301)				•	•	•				
Hastelloy C4								•		•
Coating										
PTFE				•		•				
ECTFE (Halar)								•		•
Säkapphen								•		•
Enamel								•		•
Oscillator										
Non-contact switch (C)		•	•	•	•	•		•	•	•
Relay output (R)		•	•	•	•	•		•	•	•
Transistor output (T)		•	•	•	•	•	•	•	•	•
Two-wire output (Z)				•	•	•		•	•	•
Temperature adapter										
1.4571 (StSt)		•	•	•		•		•		•
Others										
Locking G 1½ A (unpressurized)			•							•
Locking G 2 A (unpressurized)						•				
Locking G 1½ A to 4 bar			•							•

3.2 Technical data and dimensions VEGAVIB

VEGAVIB 41 and 43

Housing

Housing material	Plastic PBT (Polyester)
Protection	IP 66
Cable entry	1 x Pg 13,5 (with oscillator R = 2 x Pg 13,5)
Terminals	for max. 1,5 mm ² cross-section area of conductor

Mechanical connection

Thread	G 1 A or NPT 1" of 1.4571 (StSt)
Locking (VEGAVIB 43)	G 1½ A of 1.4571 (StSt)

Vibrating probe

Material	1.4571 (StSt)
Lateral load	60 Nm or max. 400 N on the end of the probe (VEGAVIB 41)

Extension tube (only for VEGAVIB 43)

Material	1.4571 (V4A)
Length	350 mm ... 4000 mm

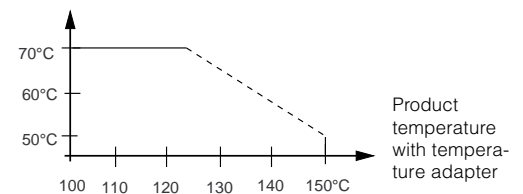
Weight

VEGAVIB 41	approx. 0,8 kg
VEGAVIB 43	approx. 0,8 kg + weight of extension tube (approx. 1 kg/m)

Ambient conditions

Ambient temperature on the housing	-40°C ... +70°C
Product temperature	-40°C ... +100°C
Storage and transport temperature	-40°C ... +70°C
Product temperature with temperature adapter of 1.4571 (option)	-40°C ... +150°C

Permissible ambient temperature



Operating pressure

VEGAVIB 41, 43	max. 10 bar
VEGAVIB 43 with locking spigot	max. 4 bar

Product

Density	≥ 0,03 g/cm ³
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Oscillator

Protection class	I
- oscillators R and C	II
- oscillators T and Z	III
Overvoltage category	> 10 V/m
Immune to EMI	

Function

Integration time	approx. 2 s
Measuring frequency	approx. 530 Hz
Signal lamp	
- oscillator C, R, T	LED for status indication
Modes	
- oscillator C, R, T	A/B-switch
	A - overflow protection or max. detection
	B - protection against dry running of pumps or min. detection

CE-approval, conformity judgement

VEGAVIB 41 and 43 vibrating level switches meet the protective regulations of EMVG (89/336/EWG) and NSR (73/23/EWG). The conformity has been judged acc. to the following standards:

EMVG	Emission	EN 50 081: 1993
	Immission	EN 50 082: 1995
NSR		EN 61 010: 1993

VEGAVIB 51, 52 and 53**Housing**

Housing material	Plastic PBT (Polyester)
Protection	IP 66
Cable entry	1 x Pg 13,5 (with oscillator R = 2 x Pg 13,5)
Terminals	for max. 1,5 mm ² cross-section area of conductor

Mechanical connection

Thread	G 1 1/2 A or NPT 1 1/2"
Material	
- VEGAVIB 51, 52	Plastic PBT, 1.4301 (StSt)
- VEGAVIB 53	1.4571 (V4A), 1.4301 (StSt)
Locking (VEGAVIB 53)	G 2 A of 1.4301 (StSt)

Vibrating probe

Material	1.4301 (StSt)
Lateral length	60 Nm or max. 400 N on the end of the probe (VEGAVIB 51)

Suspension cable (only for VEGAVIB 52)

Material	PE
Max. tensile strength	6000 Nm
Length	
- PBT-mounting boss	600 mm ... 10 m
- Steel-mounting boss	600 mm ... 20 m

Extension tube (only for VEGAVIB 53)

Material	1.4301 (StSt)
Length	350 mm ... 4000 mm

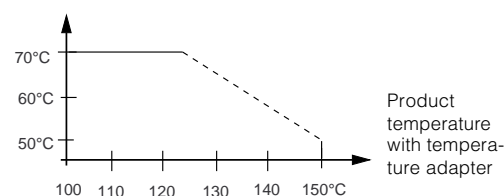
Weight

VEGAVIB 51	approx. 1,7 kg
VEGAVIB 52	approx. 1,3 kg (with 2 m) + suspension cable (approx. 0,15 kg/m)
VEGAVIB 53	approx. 2,0 kg + weight of extension tube (approx. 2,2 kg/m)

Ambient conditions

Ambient temperature on the housing	-40°C ... +70°C
Product temperature	
- VEGAVIB 51, 53	-40°C ... +100°C
- VEGAVIB 52	-40°C ... +80°C
Storage and transport temperature	-40°C ... +70°C
Product temperature with temperature adapter of 1.4571 (option)	
(VEGAVIB 51, 53 with 1.4301-mounting boss)	-40°C ... +150°C

Permissible ambient temperature



Operating pressure

VEGAVIB 51, 53	max. 10 bar
VEGAVIB 52	max. 6 bar
VEGAVIB 53 with locking spigot	unpressurized or vacuum
VEGAVIB 51 with PBT-mounting boss	max. 6 bar

Product

Density	≥ 0,03 g/cm ³
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Oscillators

Protection class	
- oscillators R and C	I
- oscillators T and Z	II
Overvoltage category	III
Immune to EMI	> 10 V/m

Function

Integration time	approx. 2 s
Measuring frequency	approx. 350 Hz
Signal lamp	
- oscillators C, R, T	LED for status indication
- oscillator Z	LED lights when vibrating probe is covered
Modes	
- oscillators C, R, T	A/B-switch
	A - overflow protection or max. detection
	B - protection against dry running of pumps or min. detection
- oscillator Z	Definition via signal conditioning instrument

VEGAVIB 51 Ex S / 53 Ex S (Deviating technical data)



Protection (acc. to BVS)	IP 65
Ambient temperature on the housing	-20°C ... +70°C
Mounting boss	1.4301 (V2A)
Operating pressure	0,8 ... 1,1 bar
	(If no hazardous atmosphere is present: vacuum ... +16 bar)

CE-approval, conformity judgement

VEGAVIB 51, 52 and 53 vibrating level switches meet the protective regulations of EMVG (89/336/EWG) and NSR (73/23/EWG). The conformity has been judged acc. to the following standards:

EMVG	Emission	EN 50 081: 1993
	Immission	EN 50 082: 1995
NSR		EN 61 010: 1993

Oscillators

C - Non-contact (E40 C, E50 C), VEGAVIB 41, 43, 51, 52, 53

Power supply	20 ... 250 V AC, 50/60 Hz 20 ... 250 V DC
Output	non-contact switch
Power consumption	< 5 mA (via load circuit)
Load current	min. 10 mA, max. 400 mA (max. 4 A to 40 ms)
With a load current of more than 300 mA the max. permissible ambient temperature will be 60°C.	

R - Relay output (E40 R, E50 R), VEGAVIB 41, 43, 51, 52, 53

Power supply	20 ... 250 V AC, 50/60 Hz 20 ... 72 V DC (up from 60 V DC and 72 V DC the max. permissible ambient temperature reduces linear from 70°C to 50°C)
Power consumption	ca. 1 ... 8 VA, max. 1,5 W
Output	Relay output
Relay data:	
- Contact	floating spdt
- Contact material	AgCdO and Au plated
- Turn-on voltage	min. 10 mV max. 250 V AC, 60 V DC
- Switching current	min. 10 µA max. 2 A AC, 1 A DC
- Breaking capacity	max. 125 VA, 54 W

T - Transistor output (E40 T, E50 T), VEGAVIB 41, 43, 51, 52, 53

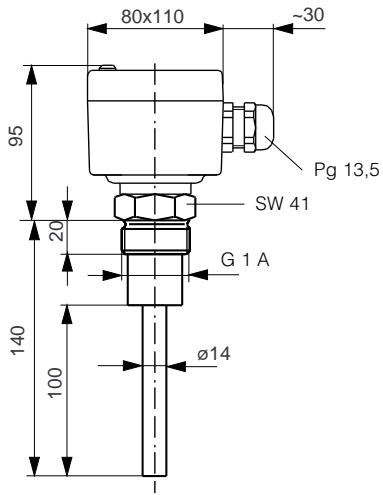
Power supply	10 ... 55 V DC
Power consumption	max. 0,5 W
Output	floating transistor output NPN/PNP-wiring
Load current	max. 400 mA (overload and permanently short-circuit resistant)
Voltage loss	max. 1 V
Load current	max. 55 V DC
Blocking current	< 10 µA

Z - Two-wire output (E50 Z, E50 Z Ex), VEGAVIB 51, 52, 53

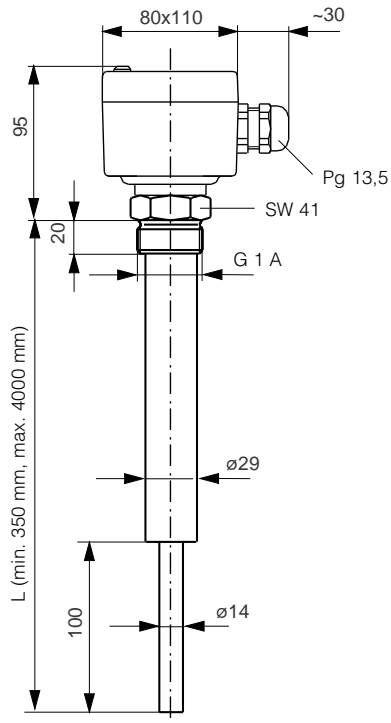
Power supply	12 ... 36 V DC (power supply via signal conditioning instrument VEGATOR)
Output	two-wire output
Power consumption	
- probe uncovered	8 mA
- probe covered	16 mA
Suitable signal conditioning instruments	VEGALOG 571 VEGATOR 425 Ex F, 525 F, 534 Ex, 536 Ex, 537 Ex, 636 Ex, 825 Ex

Safety barrier type 145 can be used for connection of E50 Z Ex to not-Ex signal conditioning instruments.

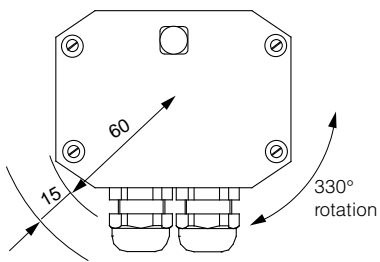
VEGAVIB 41



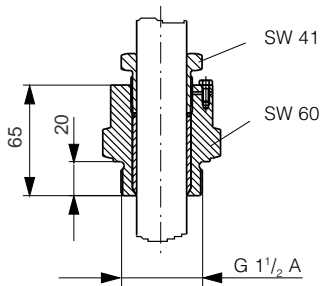
VEGAVIB 43



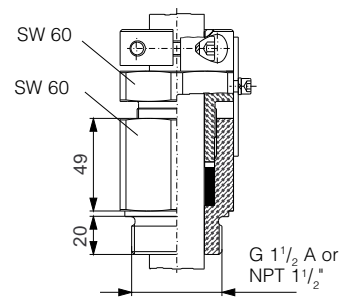
Housing



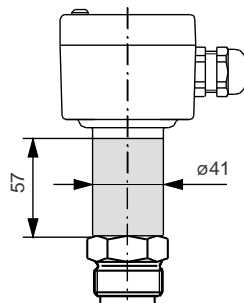
Locking spigot unpressurized



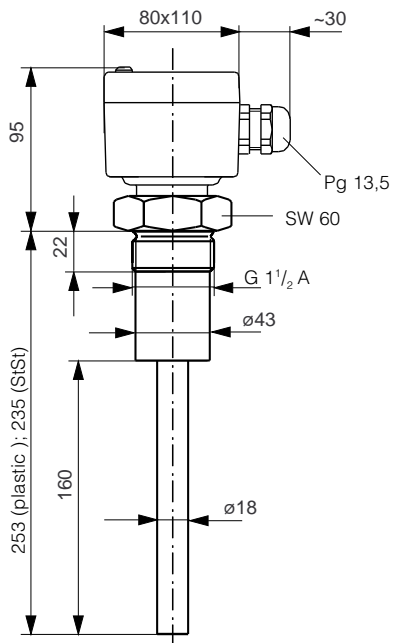
Locking spigot to 4 bar



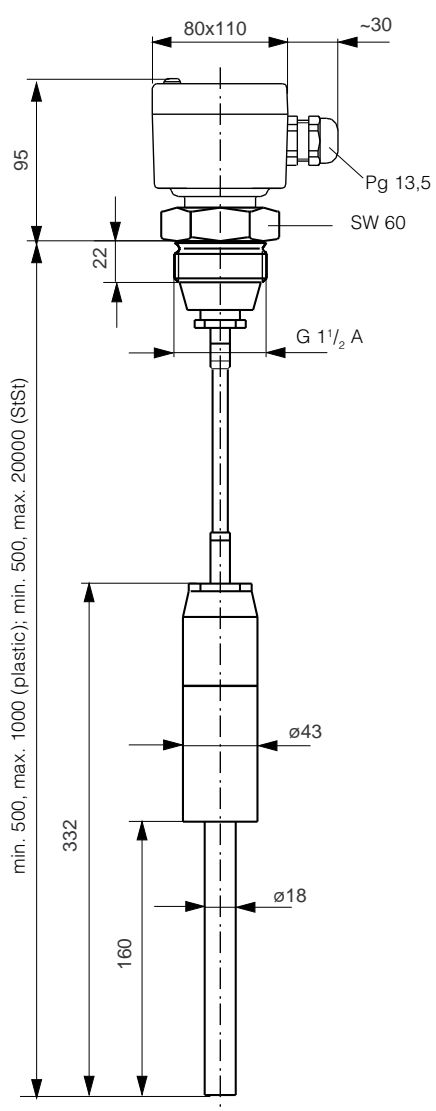
Temperature adapter (1.4571)



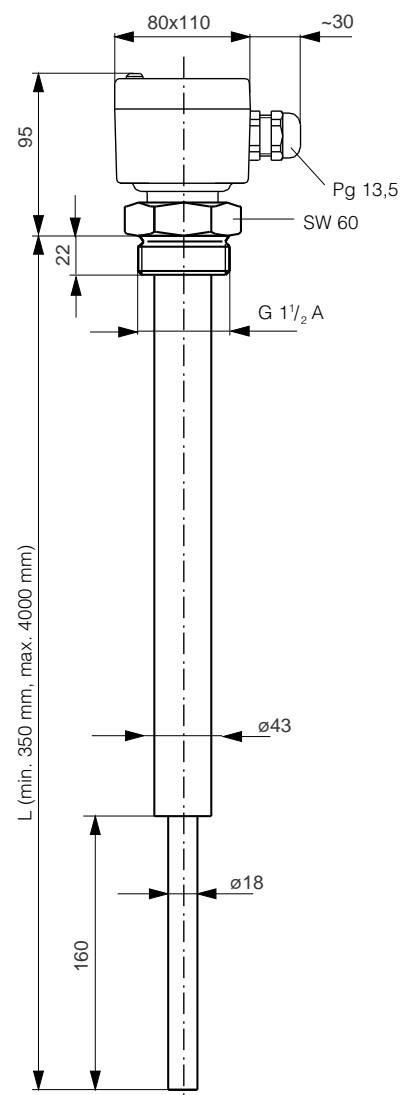
VEGAVIB 51



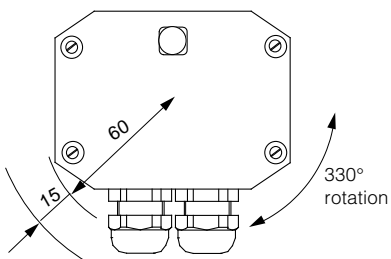
VEGA VIB 52



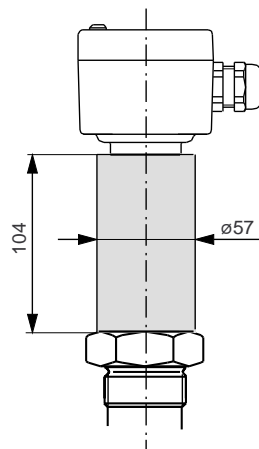
VEGA VIB 53



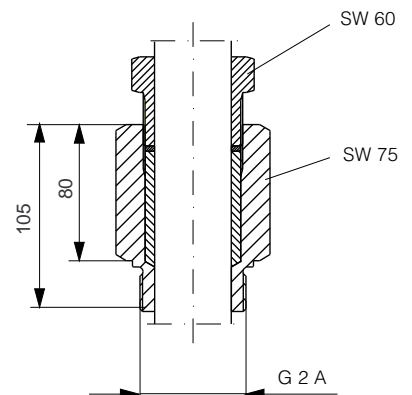
Housing



Temperature adapter (1.4301)



Locking spigot



3.3 Technical data and dimensions VEGASWING

VEGASWING 71

Housing

Housing material	PBT (Polyester)
Protection	IP 67
Cable entry	
- plug connection	4-pole plug with indication of the switching condition
- plug connection	4-wire cable (2 m long)
Terminals	max. 1 x 1,5 mm ²

Mechanical connection

Thread	G 1 A or NPT 1"
Material	1.4571 (StSt)

Tuning fork

Material	1.4581 (StSt)
----------	---------------

Weight

Total weight	0,4 kg
--------------	--------

Ambient conditions

Ambient temperature on the housing	-40°C ... 70°C
Storage and transport temperature	-40°C ... +70°C
Product temperature	-40°C ... 100°C shortly (30 mins.) to 130°C

Operating pressure

Operating pressure	max. 25 bar
Test pressure	max. 40 bar

Product

Viscosity	0,2 ... 10.000 mPa s
Density	≥0,6 g/cm ³

Electronics (transistor output E70 T)

Power supply	10 ... 55 V DC
Power consumption	max. 0,5 W
Output	floating transistor output NPN/PNP can be wired
Load current	max. 400 mA (overload and permanently short-circuit resistant)
Voltage loss	max. 1 V
Power consumption	max. 55 V DC
Blocking current	< 10 µA
Protection class	II
Overvoltage category	III

Function

Mode	A/B-switch by polarization of the supply voltage A - max. level detection or overflow protection B - min. level detection or protection against dry running of pumps
Integration time	approx. 0,5 sec
Measuring frequency	approx. 400 Hz
Hysteresis	approx. 4 mm with vertical installation
Signal lamp	illuminated ring with LED for indication of the switching (only in conjunction with plug connection)

CE-approval, conformity judgement

VEGASWING 71 vibrating level switches meet the protective regulations of EMVG (89/336/EWG) and of NSR (73/23/EWG). The conformity has been judged acc. to the following standards:

EMVG	Emission	EN 50 081: 1993
	Immission	EN 50 082: 1995
NSR		EN 61 010: 1993

VEGASWING 81, 82 and 83**Plastic housing**

Housing material	PBT (Polyester)
Protection	IP 66
Cable entry	1 x Pg 13,5 (E80 R: 2 x Pg 13,5)
Terminals	max. 1 x 1,5 mm ²

Stainless steel housing (with oscillator E80 T7 and E80 Z7)

Housing material	1.4571 (StSt)
Protection	IP 67
Cable entry	for max. 8 mm cable diameter
Terminals	max. 1 x 1,5 mm ²

Mechanical connection

Thread	G 1 A or NPT 1"
- Material	1.4571 (StSt) or Hastelloy C4
Flanges	DIN and ANSI up to DN 50 see table "3.5 Flange"
- Material	1.4571, 1.4571 with Hastelloy C4 plated DN 50 PN 40 steel enamelled
Hygienic fittings	
- Material	1.4571
- Cone	DN 25
- Bolting	DN 40, DN 50
- Tri-Clamp	1 1/2", 2"

Tuning fork

Material	1.4581 (StSt), Hastelloy C4, Hastelloy C4 enamelled, 1.4581 with Säkaphen or ECTFE coating
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Suspension cable (VEGASWING 82)

Material	PE
Length	500 mm ... 25 m

Extension tube (VEGASWING 83)

Material	1.4571 (StSt), Hastelloy C4, Hastelloy C4 enamelled 1.4571 with Säkaphen or ECTFE coating
Length	
- Steel 1.4571, Hastelloy C4	200 mm ... 4 m
- Hastelloy C4 enamelled	200 mm... 1200 mm

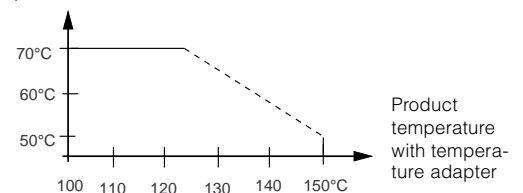
Weight

Plastic housing	approx. 1,5 kg
Stainless steel housing	approx. 2,0 kg
Tube extension (VEGASWING 83)	approx. 0,11 kg/m

Ambient conditions

Ambient temperature on the housing	-40°C ... +70°C
Storage and transport temperature	-40°C ... +70°C
Product temperature	-40°C ... +100°C shortly (30 mins.) up to 150°C (only for instrument without approval)
Product temperature with temperature adapter of 1.4571 (option)	-40°C ... +150°C

Permissible ambient temperature



Operating pressure

Operating pressure	max. 25 bar (with locking spigot to 4 bar)
Test pressure	max. 40 bar

Product

Viscosity	
- dynamic	0,2 ... 10.000 mPa s (or cSt)
- cinematic	0,2 ... 10.000 mPa s m ³ /kg (or cP) (requirement: at density 1)
Density	0,7 ... 2,5 g/cm ³ (0,5 ... 0,7 g/cm ³ re-adjustment)

Function

Mode	A/B-switch in oscillator or definition via signal conditioning instrument (E80 Z) A - max. level detection or overflow protection B - min. level detection or protection against dry running of pumps cannot be changed over with StSt-housing
Integration time	approx. 500 ms
Measuring frequency	approx. 380 Hz
Hysteresis	approx. 4 mm with vertical installation
Signal lamp	
- E80 C, R, T	LED for indication of switching condition
- E80 Z, E80 Z Ex	LED lights if tuning fork is covered (E80 T7, E80 Z7 Ex without signal lamp)

CE-approval, conformity judgement

VEGASWING 81, 82 and 83 vibrating level switches meet the protective regulations of EMVG (89/336/EWG). The conformity has been judged acc. to the following standards:

EMVG	Emission	EN 50 081: 1993
	Immission	EN 50 082: 1995

Approvals VEGASWING 80 **Overfill protection to WHG**

Approval as overfill protection to WHG	
Ambient temperature on the housing	-40°C ... +70°C
Product temperature	-40°C ... +100°C (test certificate PA VI 810.74 and Z-65.11-14) with temperature adapter to 150°C
Operating pressure	max. 25 bar

Regulations for combustible liquids (VbF)

Approval acc. to regulations for combustible liquids (VbF)	
Ambient temperature on the housing	-20°C ... +70°C
Product temperature	-20°C ... +60°C ¹⁾
Application range	
- uncoated	Liquids of class A I, A II and B (except: carbon bisulphide)
- coated	Liquids of class A I, A II and B
Operating pressure	max. 4 bar ¹⁾

Explosion protection Ex-Zone 0

Approval for the use in zone 0 of ExV (Germany: Ex-Zone 0)	
Classification	EEx ia IIC T6
Ambient temperature on the housing dependent on the temperature class	
- VEGASWING 81... Z5 Ex, 83... Z5 Ex (T6)	-20°C ... +60°C
- VEGASWING 81... Z5 Ex, 83... Z5 Ex (T5)	-20°C ... +70°C
- VEGASWING 81... Z7 Ex, 83... Z7 Ex (T6)	-20°C ... +70°C
Product temperature (only stated without Ex-atmosphere, Zone 0: -20°C ... +60°C)	
- Temperature class T6	-20°C ... +85°C
- Temperature class T5	-20°C ... +100°C
- Temperature class T4	-20°C ... +135°C
Operating pressure	(up to 100°C only with temperature adapter) max. 4 bar (-20 ... +60°C: if zone 0 requirement) > 4 bar without Ex-atmosphere
Only for connection to certified intrinsically safe instruments with the following max. values:	
- Voltage U_o	23,1 V
- Current I_k	126 mA
Internal capacitance C_i	~ 0 μ F
Internal inductance L_i	~ 0 H

Explosion protection acc. to CENELEC Ex-regulations

Approval acc. to the Ex-regulations	
Classification	EEx ia IIC T6
Ambient temperature on the housing dependent on the temperature class	
- VEGASWING 81... Z5 Ex, 83... Z5 Ex (T6)	-20°C ... +60°C
- VEGASWING 81... Z5 Ex, 83... Z5 Ex (T5)	-20°C ... +70°C
- VEGASWING 81... Z7 Ex, 83... Z7 Ex (T6)	-20°C ... +70°C
Product temperature	
- Temperature class T6	-20°C ... +85°C
- Temperature class T5	-20°C ... +100°C
- Temperature class T4	-20°C ... +135°C
Operating pressure	(up from 100°C only with temperature adapter) max. 4 bar
Only for connection to certified intrinsically safe instruments with the following max. values:	
- Voltage U_o	23,1 V
- Current I_k	126 mA
Internal capacitance C_i	~ 0 μ F
Internal inductance L_i	~ 0 H

¹⁾ If no Ex-atmosphere is present or in liquid class: AIII: operating pressure up to 25 bar, without temperature adapter up to +100°C, with temperature adapter up to +135°C

Oscillators

C - Non-contact switch (E80 C, E80 C WHG)

Power supply	20 ... 250 V AC, 50/60 Hz or 20 ... 250 V DC
- VEGASWING 81 and 83	20 ... 50 V AC, 50/60 Hz or 20 ... 120 V DC
- VEGASWING 82	non-contact switch
Output	< 5 mA (via load circuit)
Power consumption	min. 10 mA
Load current	max. 400 mA
	max. 4 A up to 40 ms (not permitted for WHG)
Protection class	I
Overvoltage category	II
Modes	A = max. detection or overfill protection B = min. detection or protection against dry running of pumps

R - Relay output (E80 R, E80 R WHG)

Power supply	20 ... 250 V AC, 50/60 Hz or 20 ... 60 V DC
- VEGASWING 81 and 83	20 ... 50 V AC, 50/60 Hz or 20 ... 60 V DC
- VEGASWING 82	1 ... 8 VA (AC), approx. 1 W (DC)
Power consumption	Relay output
Output	1 floating spdt
Relay data:	
Contact	AgCdO and Au plated
Contact material	min. 10 mV
Turn-on voltage	max. 250 V (AC), 60 V (DC)
	min. 10 µA
Switching current	max. 2 A AC, 1 A DC
Breaking capacity	max. 125 VA (AC), 54 W (DC)
Protection class	I
Overvoltage category	II
Modes	A = max. detection or overfill protection B = min. detection or protection against dry running of pumps

T - Transistor output (E80 T, E80 T7)

Power supply	10 ... 55 V DC
Power consumption	max. 0,5 W
Output	floating transistor output
Load current	max. 400 mA
Voltage loss	max. 1 V
Turn-on voltage	max. 55 V DC
Blocking current	< 10 µA
Protection class	II
Overvoltage category	II
Modes	A = max. detection or overfill protection B = min. detection of protection against dry running of pumps

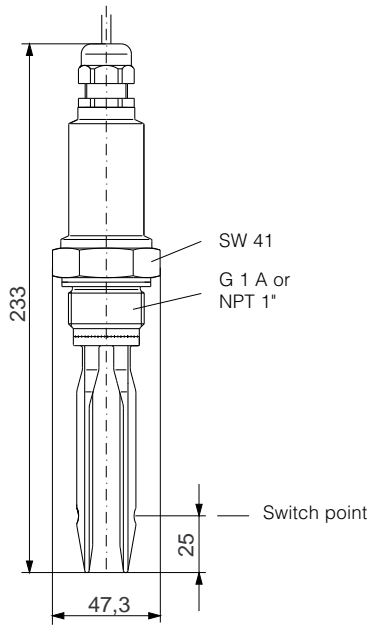
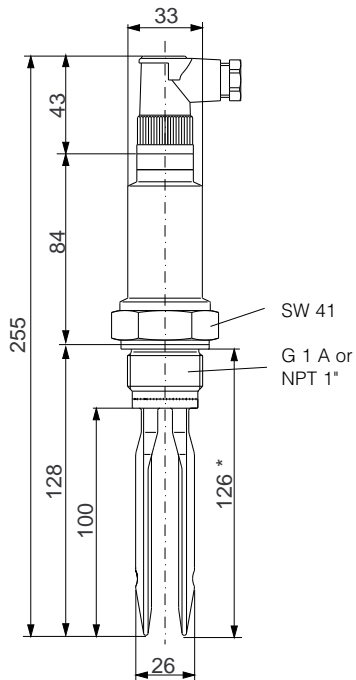
(The modes of oscillator E80 T7 cannot be switched. Mode A is adjusted as a standard feature, mode B is possible upon request).

Z - Two-wire output (E80 Z, E80 Z7)

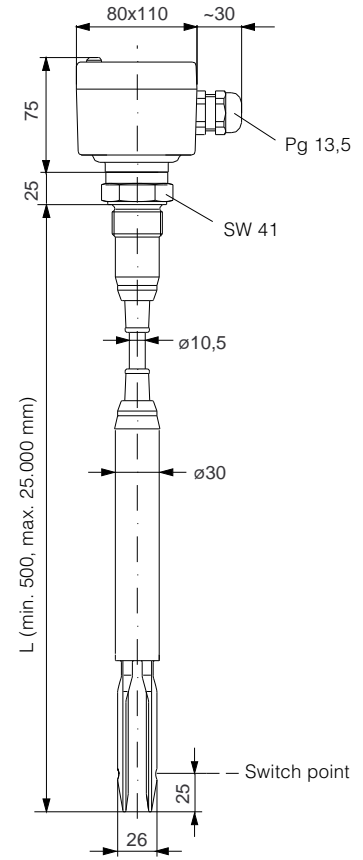
Power supply	12 ... 36 V DC (via VEGA-signal conditioning instrument)
Output	Two-wire output
Required signal conditioning instrument	VEGATOR 425, 525, 534 Ex, 536 Ex, 537 Ex, 636 Ex, 825, VEGALOG 571
Power consumption:	
- Tuning fork uncovered	approx. 7 mA
- Tuning fork covered	approx. 19 mA
- Fault signal	approx. 27 mA
Protection class	II
Overvoltage category	II
Modes	Definition via signal conditioning instrument

Ex-versions with integral E80 Z Ex, E80 Z7 Ex

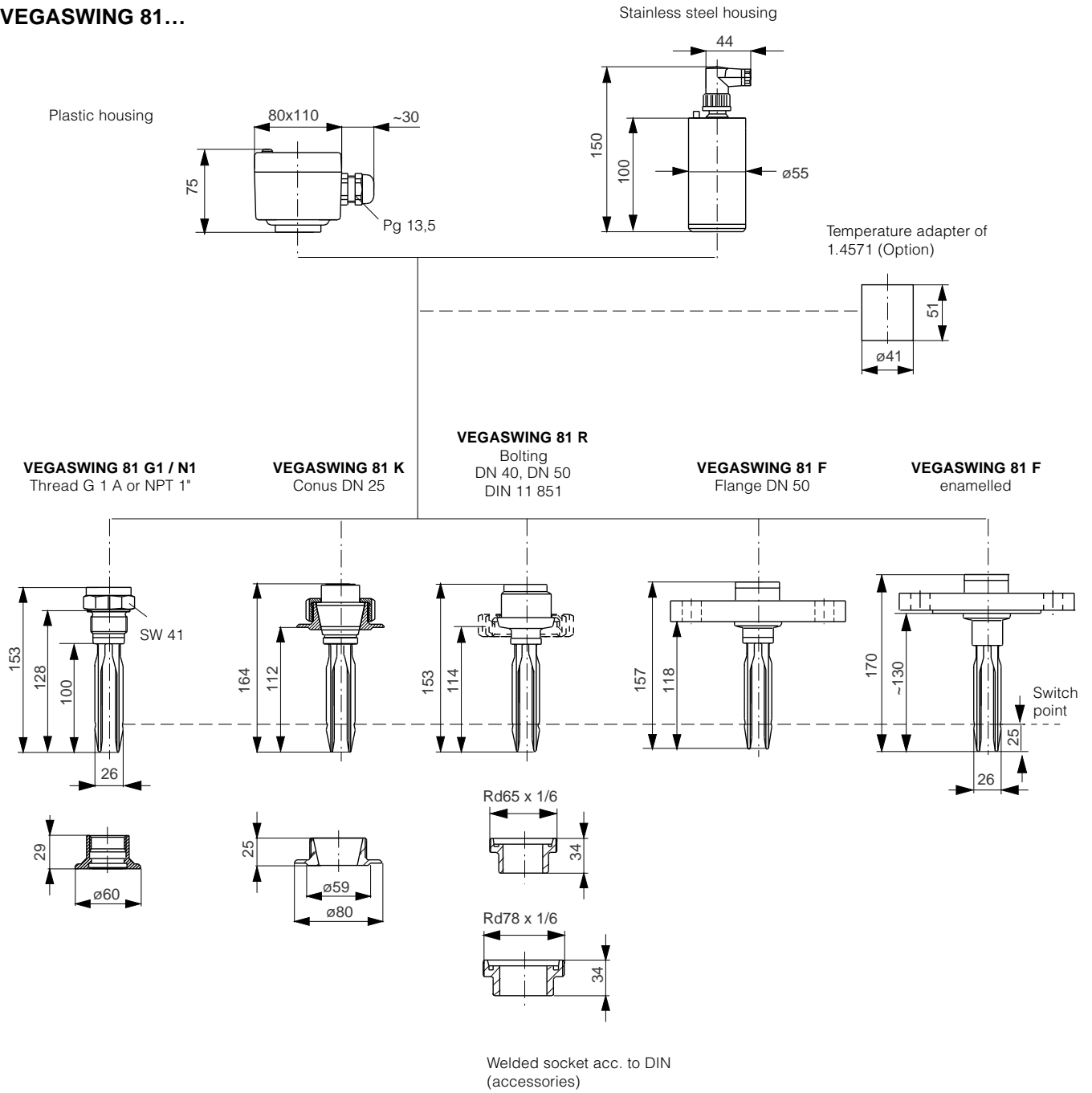
Voltage	12 ... 23 V from VEGA ... Ex-instruments
Required signal conditioning instrument	VEGATOR 425 Ex F, 534 Ex, 536 Ex, 537 Ex, 636 Ex, 825 Ex, other signal conditioning instruments with safety barrier 145
Classification	EEx ia IIC T6
For connection of E80 Z Ex to non-Ex-signal conditioning instruments safety barrier type 145 can be used.	

VEGASWING 71**Cable entry****Plug connection**

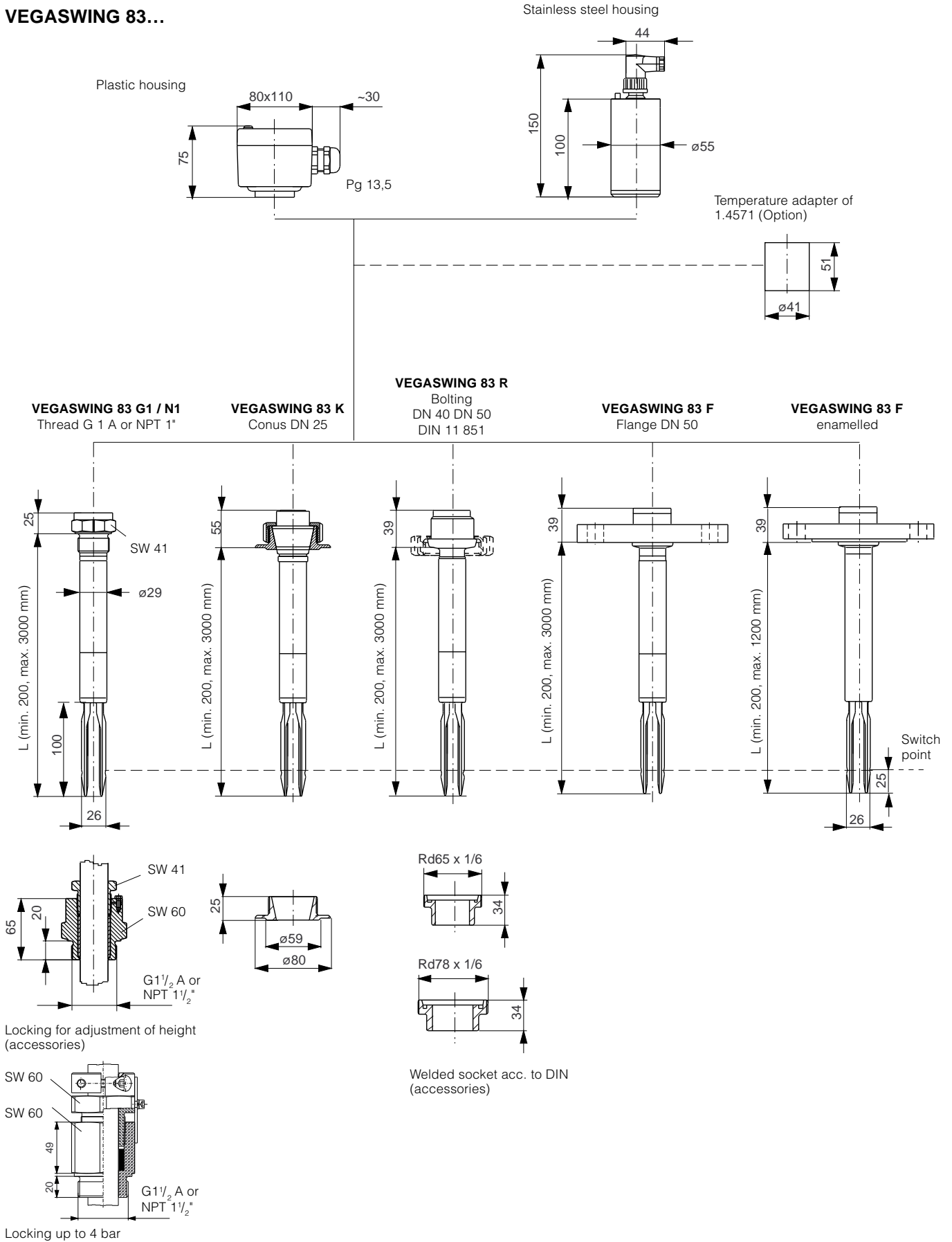
* with seal ring

VEGASWING 82...

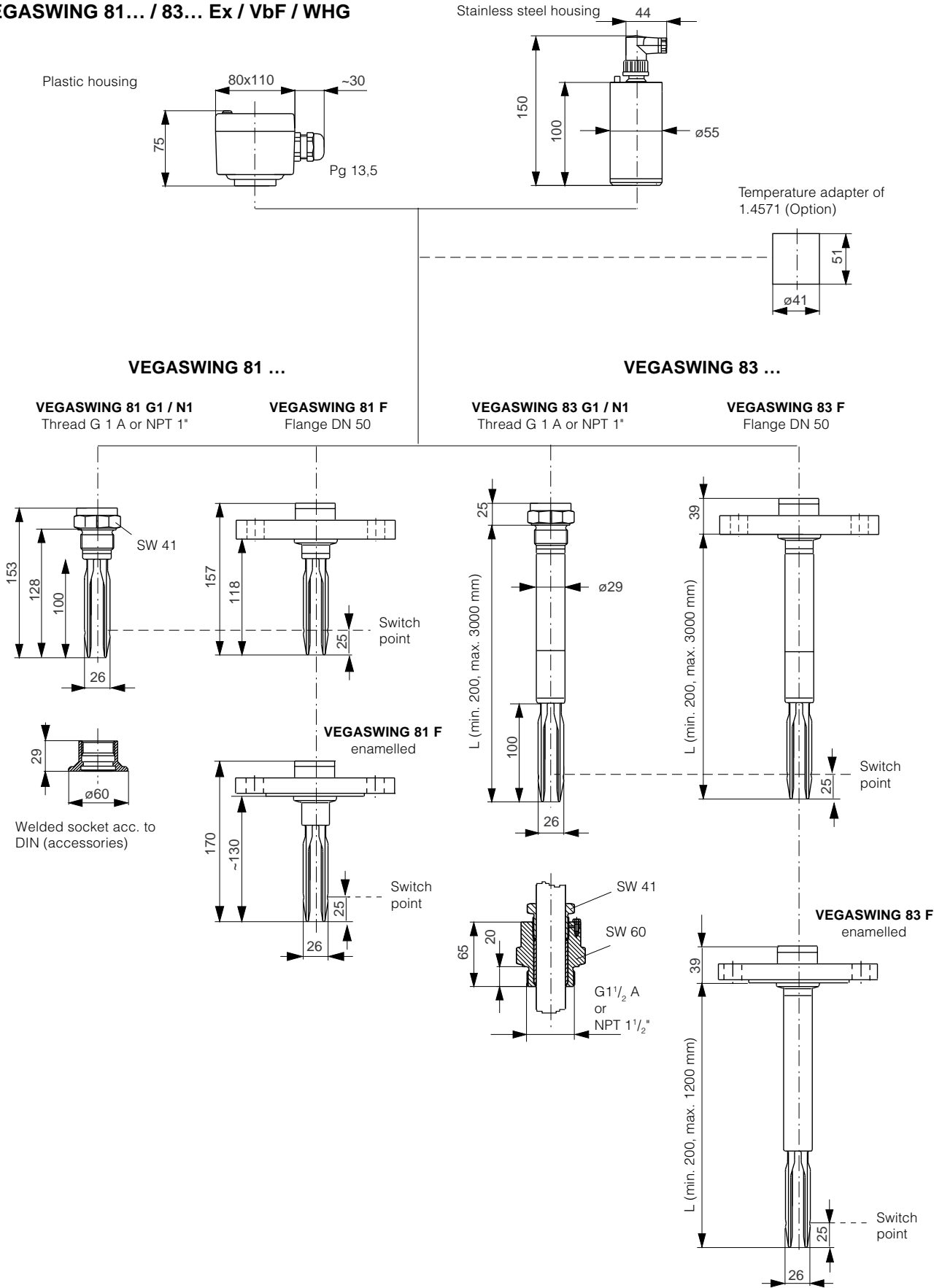
VEGASWING 81...



VEGASWING 83...



VEGASWING 81... / 83... Ex / VbF / WHG



3.4 Technical data and dimensions signal conditioning instruments

VEGATOR 534 Ex

General

Series	Module unit for carrier type 596 Ex
Dimensions	W = 25,4 mm (5 TE), H = 128,4 mm, D = 162 mm
Weight	approx. 170 g

Ambient conditions

Permissible operating temperature	-20°C ... +60°C
Storage and transport temperature	-40°C ... +70°C

Power supply

Operating voltage	$U_N = 24 \text{ V DC}$ (20 ... 30 V DC)
Power consumption	max. 4 W
Electrical connection	Multipoint connector DIN 41 612, series F (d, b, z) 33-pole

Electrical protective measures

Protection class	II
Overvoltage category	II
Protection	
- mounted into housing type 505 Ex	IP 30
Protection (mounted in carrier type 596 Ex with Ex-module)	
- front (completely assembled)	IP 30
- upper and lower side	IP 20
- wiring side	IP 00

Inputs

Number	2
Data transmission	analog
Switching threshold	12 mA
Current limitation	24 mA (permanently short-circuit proof)
Sensor supply voltage	approx. 15 ... 18 V DC
Connection line	2-wire
Resistance per conductor	max. 35 Ω
Integration time	0,1 ... 20 s, switchable acc. to direction (adjustment via potentiometer and DIL-switch)

Relay output


Number, function	2 switching relay 1 fail safe relay
Mode	A/B-switch A - max. detection or overflow protection B - min. detection or detection against dry running of pumps
Contact	1 spdt each
Contact material	AgCdO and AU-plated
Turn-on voltage	min. 10 mV max. 250 V AC, 60 V DC
Switching current	min. 10 μA max. 2 A AC, 1 A DC
Breaking capacity	max. 125 VA AC, 54 W DC

Transistor output

Number, function	3, synchronically switching with relay outputs
Galvanic separation	floating
Max. value	U_B max. = 36 V DC I_B max. = 60 mA
Voltage loss on transistor	U_{CE} min. $\leq 1,5 \text{ V}$ at $I_B = 60 \text{ mA}$
Blocking current	$< 10 \mu\text{A}$

Indication element

LED in the front	
- green on	operating voltage on
- yellow	switch point control
- red	fault signal

Approvals 

Flame proofing intrinsic safety EEx ia IIC or EEx ia IIC
 Max. values $U_0 = 20\text{ V}$
 $I_k = 126\text{ mA}$
 $P = 627\text{ mW}$
 Characteristics linear

	EEx ia IIC			EEx ia IIB	
Max. permissible outer inductance (mH)	0,5	1,0	1,5	< 0,5	0,5 ... 20
Max. permissible outer capacitance (nF)	97	78	68	97	486

The intrinsically safe circuits are reliably galvanically separated from the non-intrinsically safe circuits up to a peak value of the nominal voltage of 375 V.
 The intrinsically safe circuits of channel 1 and channel 2 are reliably galvanically separated.

Electrical connection

Mounted in
 - carrier BGT 596 Ex 33-pole multipoint connector, series F d, b, z with coding holes
 - in housing type 505 Ex terminal, max. for 1,5 mm²

CE-approval, Conformity judgement

The signal conditioning instrument meets with the protective regulations of EMVG (89/336 EWG) and of NSR (73/23/EWG). The conformity is judged acc. to the following standards:

EMVG	Emission	EN 50 081 - 1: 1993
	Immision	EN 50 082 - 2: 1995
NSR		EN 61 010 - 1: 1993

VEGATOR 536 Ex, 537 Ex

General

Series Module unit for carrier type 596 Ex
 Dimensions $W = 25,4\text{ mm}$ (5 TE), $H = 128,4\text{ mm}$, $D = 162\text{ mm}$
 Weight approx. 180 g

Ambient conditions

Permissible operating temperature -20°C ... +60°C
 Storage and transport temperature -40°C ... +70°C

Power supply

Operating voltage 20 ... 53 V AC, 20 ... 72 V DC
 Power consumption max. 3 W
 Electrical connection Multipoint connector DIN 41 612, series F (d, b, z) 33-pole

Electrical protective measures

Protection class II
 Overvoltage category II
 Protection
 - mounted in housing type 505 Ex IP 30
 Protection (mounted in carrier type 596 Ex with Ex-module)
 - front (completely assembled) IP 30
 - upper and lower side IP 20
 - wiring side IP 00

Inputs

Number of input	
- VEGATOR 536 Ex	1 sensor input
- VEGATOR 537 Ex	2 sensor inputs
Data transmission	analog
Switching threshold	12 mA
Current limitation	24 mA (permanently short-circuit proof)
Sensor supply voltage	approx. 15 ... 18 V DC
Connection line	2-wire
Resistance per conductor	max. 35 Ω
Integration time	0,1 ... 20 s, switchable acc. to direction (adjustment via potentiometer and DIL-switch)

Relay output

Number, function	
- VEGATOR 536 Ex	1 switching relay (spdt), 1 fail safe relay
- VEGATOR 537 Ex	2 switching relay (spdt), 1 fail safe relay
Mode	A/B-switch A - max. detection or overflow protection B - min. detection or detection against dry running of pumps
Contact	1 spdt each
Contact material	AgCdO and Au-plated
Turn-on voltage	min. 10 mV max. 250 V AC, 60 V DC
Switching current	min. 10 μ A max. 2 A AC, 1 A DC
Breaking capacity	max. 125 VA AC, 54 W DC

Transistor output

Number, function	
- VEGATOR 536 Ex	2, synchronically switching with relay output
- VEGATOR 537 Ex	3, synchronically switching with relay output
Galvanic separation	floating
Max. value	U_B max. = 36 V DC I_B max. = 60 mA
Voltage loss on transistor	U_{CE} min. \leq 1,5 V bei $I_B = 60$ mA
Blocking current	$< 10 \mu$ A

Approval



Flame proofing	intrinsic safety EEx ia IIC or EEx ia IIB
Max. value	$U_0 = 20$ V $I_k = 126$ mA $P = 627$ mW
Characteristics	linear

	EEx ia IIC			EEx ia IIB	
Max. permissible outer inductance (mH)	0,5	1,0	1,5	< 0,5	0,5 ... 20
Max. permissible outer capacitance (nF)	97	78	68	97	486

The intrinsically safe circuits are reliably galvanically separated from the not-intrinsically safe circuits up to a peak value of the nominal voltage of 375 V.

The intrinsically safe circuits of channel 1 and channel 2 are reliably galvanically separated.

Electrical connection

Mounted in	
- carrier BGT 596 Ex	33-pole multipoint connector, series F d, b, z with coding holes
- in housing type 505 Ex	terminal, max. for 1,5 mm ²

CE-approval, Conformity judgement

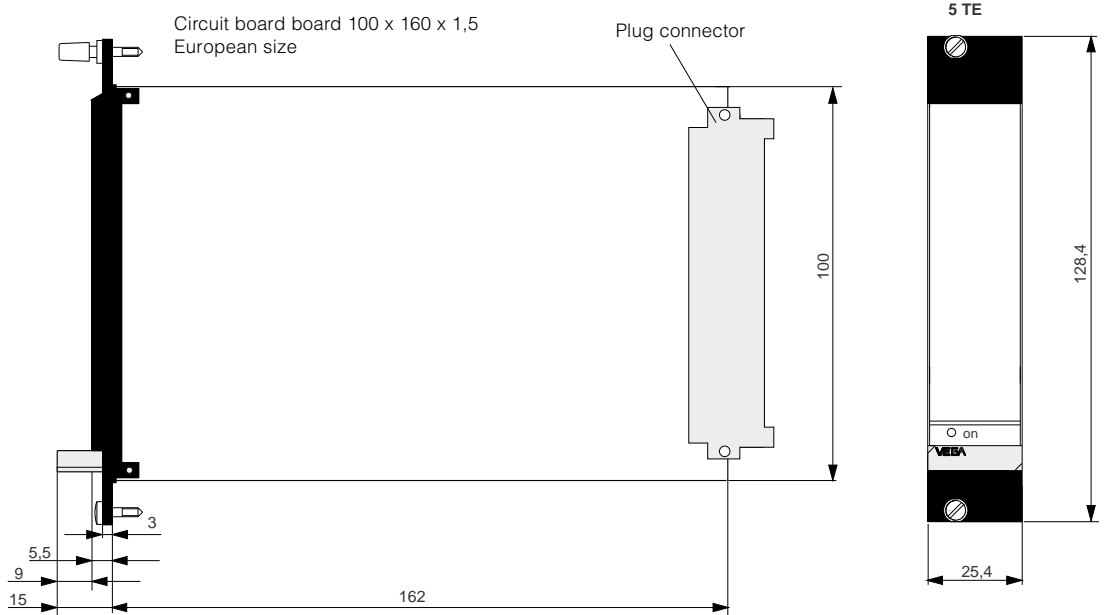
The signal conditioning instrument meets with the protective regulations of EMVG (89/336 EWG) and of NSR (73/23/EWG). The conformity is judged acc. to the following standards:

EMVG	Emission	EN 50 081 - 1: 1993
	Immission	EN 50 082 - 2: 1995
NSR		EN 61 010 - 1: 1993

Indication element

LED in the front	
- green on	operating voltage on
- yellow	switch point control
- red	fault signal

Series 500



VEGATOR 636 Ex

General

Series	module instrument with plug-in socket, carrier rail mounting acc. to DIN 46 277, Bl. 3
Dimensions	W = 36 mm (5 TE), H = 118,5 mm, D = 134 mm
Weight	approx. 170 g

Ambient conditions

Ambient temperature	-20°C ... +60°C At an operating voltage of 60 ... 72 V DC the permissible ambient temperature reduces linear from 60°C to 40°C
Storage and transport temperature	-40°C ... +70°C

Power supply

Operating voltage	20 ... 250 V AC, 50/60 Hz 20 ... 72 V DC
Power consumption	max. 3 W (3 ... 18 VA)

Electrical protective measures

Protection class	II
Overvoltage category	II
Protection	
- instrument	IP 30
- terminal	IP 20
Electrical separating measures	reliable operation (VDE 0106, part 1) between power supply, measuring data input, level relay and transistor output

Inputs

Number of inputs	1 current input
Data transmission	analog
Sensor supply voltage	approx. 15 ... 18 V DC
Hysteresis	100 µA fix
Switching threshold	12 mA
Current limitation	24 mA, permanently short-circuit proof
Temperature error	0,05 %/10 K of range
Connection line	2-wire
Resistance per conductor	max. 35 Ω
Integration time	0,1 ... 20 s, switchable acc. to direction

Relay output

Number, function	1 switching relay (spdt)
Mode	A/B-switch A - max. detection of overfill protection B - min. detection or detection against dry running of pumps
Contact	1 spdt each
Contact material	AgCdO and Au-plated
Turn-on voltage	min. 10 mV DC max. 250 V AC, 60 V DC
Switching current	min. 10 µA DC max. 2 A AC, 1 A DC
Breaking capacity	max. 125 VA AC, 54 W DC

Transistor output

Number, function	1, synchronically switching with relay outputs
Galvanic separation	floating
Max. values	U_B max. = 36 V DC I_B max. = 60 mA (short-circuit proof)
Voltage loss on transistor	U_{CE} min. ≤ 1,5 V at I_B = 60 mA
Blocking current	< 10 µA

Indication element

LED in the front
 - green on
 - yellow
 - red

operating voltage on
 switch point control
 fault signal

Approvals 

Flame proofing
 Max. values

intrinsic safety EEx ia IIC or EEx ia IIB
 $U_0 \leq 20\text{ V}$
 $I_K \leq 125\text{ mA}$
 $P \leq 624\text{ mW}$

Characteristics
 linear

	EEx ia IIC			EEx ia IIB	
Max. permissible outer inductance (mH)	0,5	1,0	1,5	< 0,5	0,5 ... 20
Max. permissible outer capacitance (nF)	97	78	68	97	486

The intrinsically safe circuits are reliably galvanically separated from the non-intrinsically safe circuits up to a nominal voltage of 375 V.
 In case of fault signal the max. voltage on the intrinsically safe circuits may not exceed 250 V_{eff}.

Electrical connection

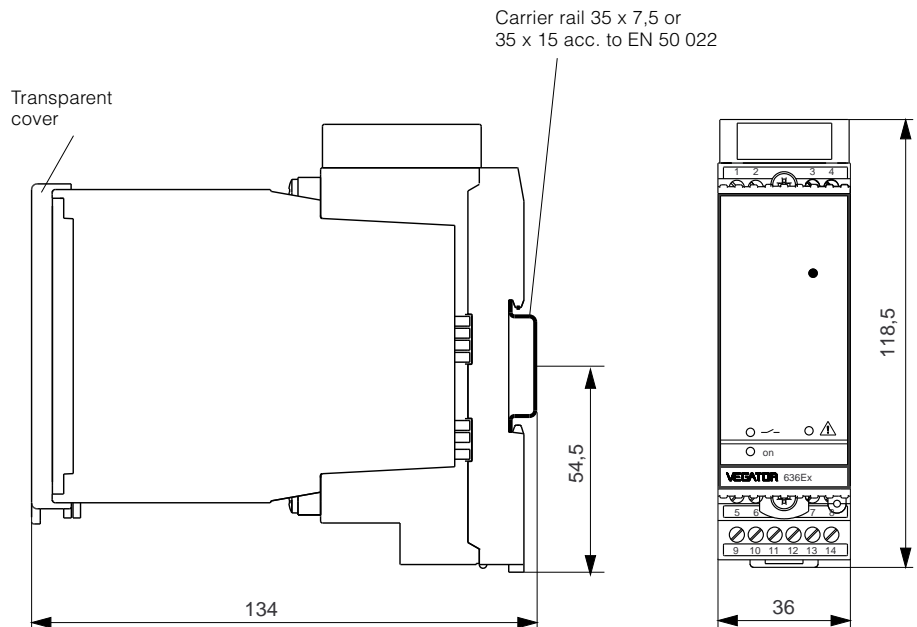
Terminal max. for 1,5 mm²

CE-approval, Conformity judgment

The signal conditioning instrument meets with the protective regulations of EMVG (89/336 EWG) and of NSR (73/23/EWG). The conformity is judged acc. to the following standards:

EMVG	Emission	EN 50 081 - 1: 1993
	Immission	EN 50 082 - 2: 1995
NSR		EN 61 010 - 1: 1993

Series 600



3.5 Flange

Welded flanges

The welded flanges for VEGASWING 81 F... / 83 F... are generally made of stainless steel (1.4571) acc. to DIN or ANSI-standards.

For dimensions of standard flanges see tables.

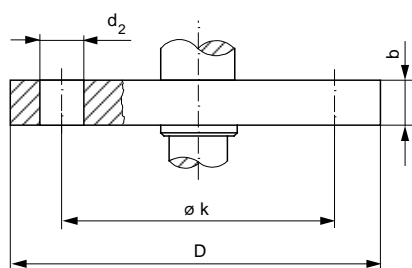
As protection against aggressive products the parts in contact with the medium are plastic coated.

VEGASWING 81

ECTFE (Halar) or enamel-coating for flange and tuning fork.

VEGASWING 83

Säkapfen, ECTFE (max. 1200 mm) or enamel-coating (max. 800 mm) for flange extension tube and tuning fork.



D = outer flange diameter
 b = flange thickness
 k = diameter of hole circle
 d₂ = diameter of holes

Flanges acc. to DIN

Flange DN	PN	Dimensions			Holes		d ₂
		D	b	k	No.	Screws	
50	6	140	14	110	4	M12	14
50	40	165	20	125	4	M16	18
65	6	160	14	130	4	M12	14
65	40	185	22	145	8	M16	18
80	6	190	16	150	4	M16	18
80	40	200	24	160	8	M16	18
100	16	220	20	180	8	M16	18
150	16	285	22	240	8	M20	22

Flanges acc. to ANSI

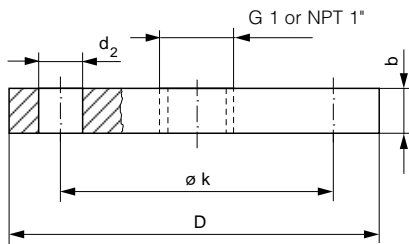
Flange ANSI	psi	Dimensions			Holes		d ₂
		D	b	k	No.	Screws	
1 1/2"	150	127,0	17,5	98,4	4	M14	15,9
1 1/2"	300	155,6	20,6	114,4	4	M20	22,2
2"	150	152,4	19,0	120,6	4	M16	19,0
2"	300	165,1	22,2	127,0	4	M16	19,0
2 1/2"	150	177,8	22,2	139,7	4	M16	19,0
2 1/2"	300	190,5	25,4	149,2	8	M20	22,2
3"	150	190,5	23,8	152,4	4	M16	19,0
3"	300	209,5	28,6	168,3	8	M20	22,2
4"	150	228,6	23,8	190,6	8	M16	19,0

Note:

The permissible pressure load of the flanges is partly below the value of VEGASWING of 25 bar.

Flanges

The screwed flanges for VEGASWING 81 F... / 83 F... are generally made of stainless steel (1.4571) acc. to DIN or ANSI-standards. For dimensions of standard flanges see tables.



- D = outer flange diameter
- b = flange thickness
- k = diameter of hole circle
- d₂ = diameter of holes

Flange acc. to DIN with G 1 or NPT 1"

Flange DN	PN	Dimensions			Holes		d ₂
		D	b	k	No.	Screws	
40	40	150	18	110	4	M16	18
50	40	165	20	125	4	M16	18
80	40	185	24	160	8	M16	18
100	40	200	24	190	8	M16	20

Flange acc. to ANSI with G 1 or NPT 1"

Flange ANSI	psi	Dimensions			Holes		d ₂
		D	b	k	No.	Screws	
1 1/2"	150	127,0	17,5	98,4	4	M14	15,9
2"	150	152,4	19,0	120,6	4	M16	19,0
3"	150	190,5	23,8	152,4	4	M16	19,0
4"	150	228,6	23,8	190,6	8	M16	19,0

Note:

The permissible pressure load of flanges is partly below the value of VEGASWING of 25 bar.

3.6 Application examples

Single point control

Measuring system for detection of the max. level, e.g. overflow protection or emptying pump.

- Vibrating level switch at the respective switch point
 - mounted at the respective height
 - as tube version, can be shifted, mounted with locking
 - with tube or cable extension in appropriate position
- suitable signal conditioning instruments (in conjunction with oscillator Z)
VEGATOR 425 Ex F, 534 Ex, 536 Ex, 537 Ex, 636 Ex or 825 Ex

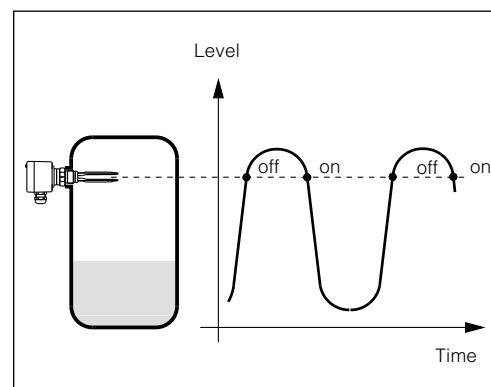


Fig. 3.1 Single point control

Two-point control

Measuring system for detection of two levels (alternating function), e.g. pump control

- Vibrating level switches at the appropriate switch points
 - mounted at the respective height
 - as tube version, can be shifted, mounted with locking
 - with tube or cable extension in appropriate position
- suitable signal conditioning instruments (in conjunction with oscillator Z)
VEGATOR 537 Ex

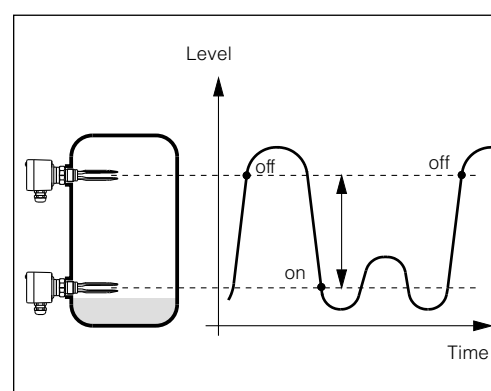


Fig. 3.2 Two-point control

Double single point control

Measuring system for detection of the min. and max. level

- Vibrating level switches at the appropriate switch points
 - mounted at the respective height
 - as tube version, can be shifted, mounted with locking
 - with tube or cable extension in appropriate position
- suitable signal conditioning instruments (in conjunction with oscillator Z)
VEGATOR 534 Ex or 537 Ex

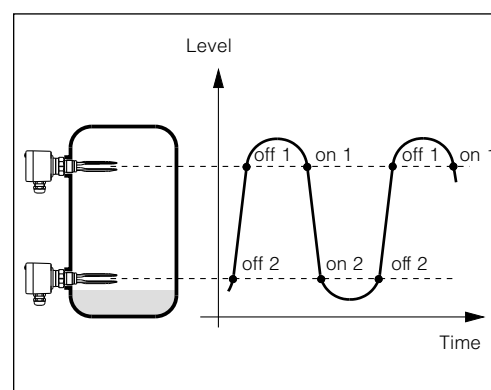


Fig. 3.3 Double single point control

or

measuring system for detection of one level each in two different vessels.

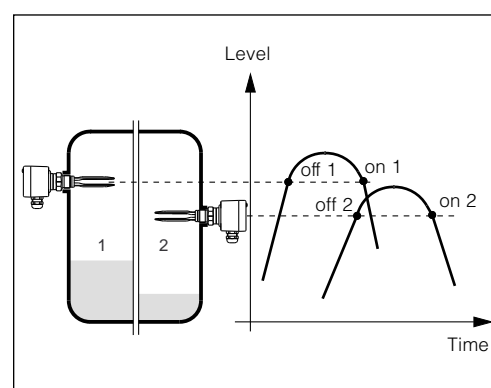


Fig. 3.4 Double single point control with two vessels

Instead of VEGASWING 81 any other vibrating level switch of VEGASWING and VEGAVIB series is possible.

3.7 Approvals

If measuring systems are installed acc. to the following approvals, the respective legal documents must be noted and their regulations observed. The documents are supplied with the respective measuring system.

Overfill protection to WHG

Level detection with fault monitoring

Instrument	Oscillator	Level switch	Certificate no. VEGATOR
Vibration VEGASWING 81... Ex, 83... Ex	E80 Z Ex E80 Z7 Ex	425 Ex F, 825 Ex 425 F, 525 F (4) 534 Ex	PA-VI 810.74
		536, 536 Ex 537, 537 Ex 636, 636 Ex	applied
Vibration VEGASWING 81 and 83 C, R, T	E80 C E80 R E80 T	compact instrument	Z-65.11 - 14

Overfill protection to VbF

Level detection with fault monitoring

Instrument	Oscillator	Level switch	Certificate	Certificate 01/PTB-no.
Vibration VEGASWING 81... Ex, 83... Ex	E80 Z Ex E80 Z7 Ex	425 Ex F 525 F (5) 825 Ex, 534 Ex	III B/S 2175 F	III B/S 2175 F
		536 Ex, 537 Ex 636 Ex	applied	

Level measuring instrument for the use in dust-explosive areas (Zone 10)

Level detection with fault monitoring

Instrument	Oscillator	Level switch VEGATOR	Certificate-no. BVS-no.
Vibration VEGAVIB 51 Ex S.- 52 Ex S.- 53 Ex.5.-	E50 C E50 R E50 T	Compact instrument	94.Y.8009
		E50 Z Ex	544 Ex 536 Ex, 537 Ex 636 Ex

Level measuring instrument for the use in hazardous areas PTB Zone 0 (Germany)

Level detection with fault monitoring

Instrument	Conformity certificate PTB-no.	Oscillator	Conformity certificate PTB-no.	Level switch VEGATOR	Conformity certificate PTB-no.
Vibration VEGASWING 81... Ex, 83... Ex	Ex-92.C.2181	E80 Z Ex E80 Z7 Ex	Ex-92.C.2181	425 Ex F	Ex-80/2084 X
				825 Ex	Ex-89.C.2158
				525 F with safety barrier type 145	Ex-85.B.2038
				534 Ex	Ex-93.C.4066 X
				536 Ex	Ex-95.D.2065 X
				537 Ex	Ex-95.D.2073 X
636 Ex	applied				

Level measuring instrument acc. to CENELEC for the use in hazardous areas

Level detection with fault monitoring

Instrument	Conformity certificate PTB-no.	Oscillator	Conformity certificate PTB-no.	Level switch VEGATOR	Conformity certificate PTB-no.
Vibration VEGAVIB 51 Ex 52 Ex 53 Ex	Ex-95.D.2023	E50 Z Ex	Ex-95.D.2023	425 Ex F	Ex-80/2084 X
				825 Ex	Ex-89.C.2158
				525 F with safety barrier type 145	Ex-85.B.2038
				534 Ex	Ex-93.C.4066 X
				536 Ex	Ex-95.D.2065 X
				537 Ex	Ex-95.D.2073 X
636 Ex	applied				
Vibration VEGASWING 81... Ex, 83... Ex	Ex-92.C.2141	E80 Z Ex E80 Z7 Ex	Ex-92.C.2141	425 Ex F	Ex-80/2084 X
				825 Ex	Ex-89.C.2158
				525 F with safety barrier type 145	Ex-85.B.2038
				534 Ex	Ex-93.C.4066 X
				536 Ex	Ex-95.D.2065 X
				537 Ex	Ex-95.D.2073 X
636 Ex	applied				

4 Electrical connection

4.1 VEGAVIB

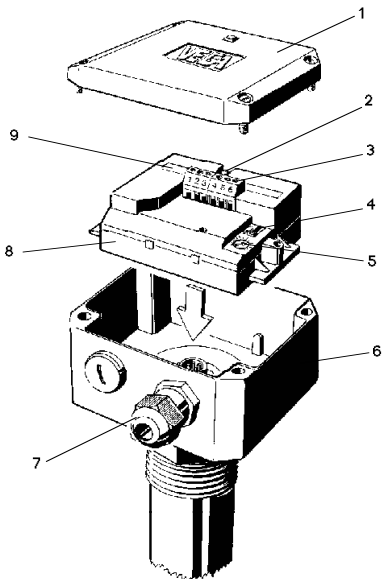
Danger

During connection switch off the power supply.

The electrical connection must be carried out dependent on the integral oscillator. Connect the mains voltage acc. to the wiring diagrams on the following pages.

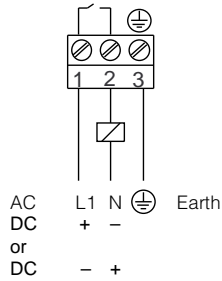
Connect VEGAVIB generally to vessel ground (PA) or in plastic vessels to the next earth potential. Laterally on the hexagon of the mounting boss there is a thread (screw M4 x 5). This connection is used to lead away electrostatic charges.

For dust-Ex applications the PA-terminal (at the hexagon of the mounting boss) must be connected to the potential equalization line.



- 1 Cover of the housing
- 2 Signal lamp (LED)
- 3 Terminals
- 4 A/B-switch
- 5 Potentiometer
- 6 Housing
- 7 Cable entry (Pg 13,5)
- 8 Oscillator
- 9 Type plate of oscillator

Non-contact switch (E40 C, E50 C)

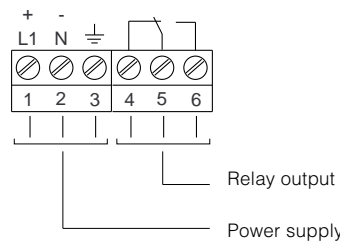


Power supply:
20 ... 250 V AC, 50/60 Hz
20 ... 250 V DC
(for further information see Technical data)

For direct control of relays, magnetic valves, contactors, horns etc. Must not be operated without connected load, as the oscillator will be destroyed when directly connected to mains. Not suitable for connection to DCS-input.

The domestic current is briefly reduced to below 1 mA after switching off the load, so that contactors with a retaining current lower than the permanently flowing domestic current of the electronics, can be switched off reliably.

Floating relay output (E40 R, E50 R)



Power supply:
20 ... 250 V AC, 50/60 Hz
20 ... 72 V DC
(for further information see Technical data)

Is used to switch external voltage sources to relays, contactors, magnetic valves, horns etc.

Two-wire output (E50 Z)

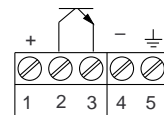
For connection to a VEGATOR signal conditioning instrument (only possible with VEGAVIB 51, 52 and 53)

Voltage supply via the connected VEGATOR signal conditioning instrument (12 ... 36 V DC) (for further information see Technical data)

The signal lamp in the housing lights generally when the probe is covered, independent of the mode adjusted in the signal conditioning instrument.

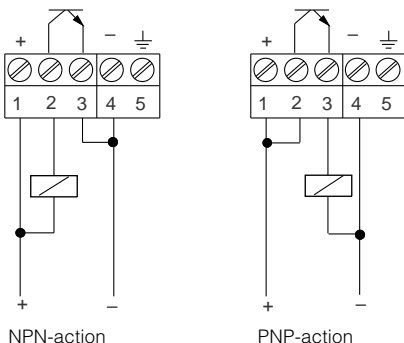
Observe the operating instructions of the signal conditioning instrument (suitable signal conditioning instruments see Technical data).

Floating transistor output (E40 T, E50 T)

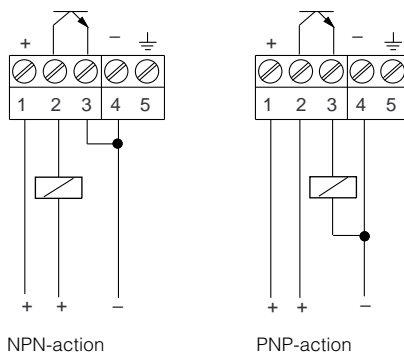


Power supply:
10 ... 55 V DC
(for further information see following switching examples as well as Technical data)

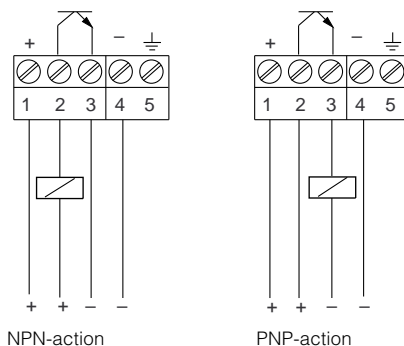
Switching examples



The transistor switches the supply voltage of the oscillator to the binary input of a DCS or to an electrical load. Due to the various connections of the user (load) PNP- or NPN-action is available.

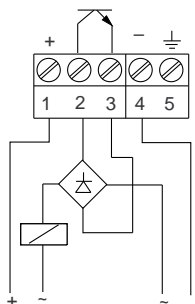


The transistor switches a second voltage source with same reference potential to the binary input of a DCS or to an electrical load. Due to the various connections of the user (load) PNP- or NPN-action is available.

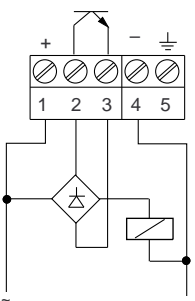


The transistor switches a second, galvanically separated voltage source to the binary input of a DCS or to an electrical load. Due to the various connections of the user (load) PNP- or NPN-action is available.

Control of alternating current load



The transistor switches a galvanically separated alternating current 10 ... 42 V AC to a load.



The transistor switches an alternating current 10 ... 42 V AC, which is also power supply to a load.

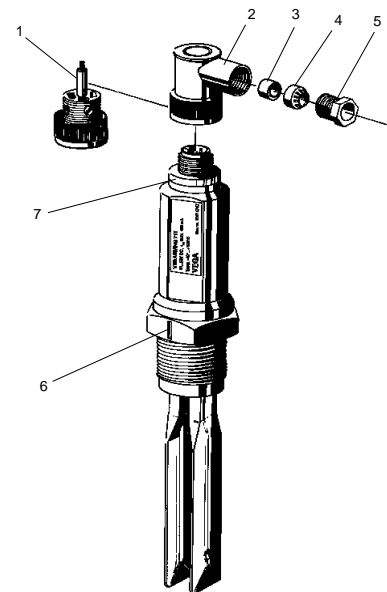
Note

The transistor outputs of several VEGAVIB can be connected in series or in parallel to combine their signals logically. The wiring must be made such that terminal 2 has always higher voltage against terminal 3.

4.2 VEGASWING 70

Danger

During connection switch off the power supply.



- 1 Socket piece
- 2 Angled housing
- 3 Sealing ring
(3 pcs. for different cable-ø)
- 4 Terminal
- 5 Pressure screw
- 6 Marking
- 7 Illuminated ring with LED

Floating transistor output E70 T

Power supply:
10 ... 55 V DC
(for further information see following switching examples as well as Technical data)

The supply lines (terminal 1 and 4) must be polarized to determine the switching mode of the transistor output (mode A/B).

Mode A
Max. detection or overflow protection
- terminal 1: +
- terminal 4: -

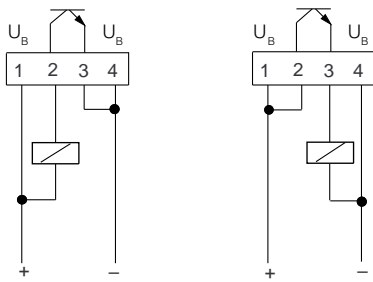
Mode B
Min. detection or protection against dry running of pumps
- terminal 1: -
- terminal 4: +

With the various load connections NPN- or PNP-action is available. Note, that when connecting terminal 2 should have more positive voltage potential against terminal 3.

Switching examples

The transistor switches the supply voltage of the oscillator to the binary input of a DCS or to an electrical load.

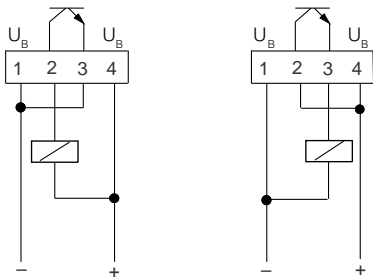
Mode A



NPN-action

PNP-action

Mode B

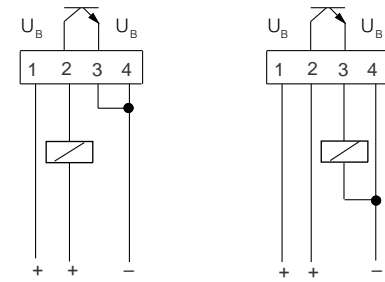


NPN-action

PNP-action

The transistor switches a second voltage source with same reference potential to the binary input of a DCS or to an electrical load.

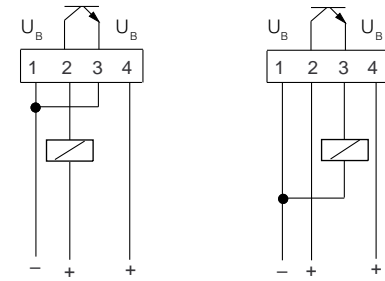
Mode A



NPN-action

PNP-action

Mode B



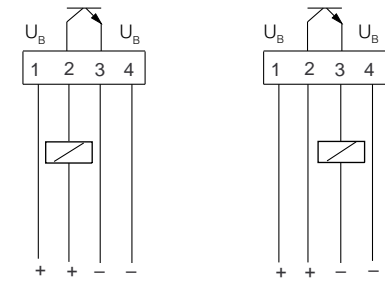
NPN-action

PNP-action

The transistor switches a second, galvanically isolated voltage source to the binary input of a DCS or to an electrical load.

Mode A

For mode B reverse polarity of terminals 1 and 4.



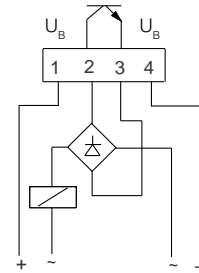
NPN-action

PNP-action

Control of alternating current loads

The transistor switches a galvanically isolated alternating current 10 ... 42 V AC to a load.

Mode A



Note

The transistor outputs of several VEGASWING 71 can be connected in series or in parallel. The wiring must be made such that terminal 2 has always higher voltage than terminal 3.

4.3 VEGASWING 80

Danger

Switch off power supply during connection.

The electrical connection must be carried out dependent on the integral oscillator. Connect the mains voltage acc. to the wiring diagrams on the following pages.

Note

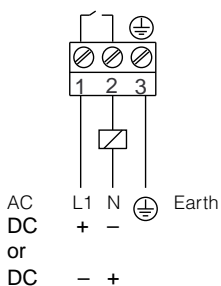
If strong electromagnetic interferences have to be expected we recommend to use screened cable for the Z-electronics. The screening should be made on the sensor side (VEGASWING) via terminal 3.

Generally connect VEGASWING to earth (PA). Therefore a thread (screw M4 x 5) is provided laterally on the hexagon. The connection feeds the earth potential and drains off electrostatic charges.



For Ex-applications the additional regulations for hazardous areas must be observed.

Non-contact switch (E80 C)



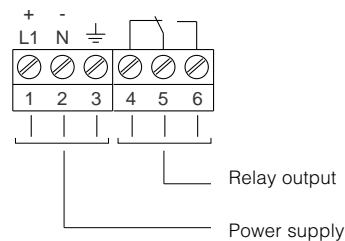
Power supply:
20 ... 250 V AC, 50/60 Hz
20 ... 250 V DC
(for further information see Technical data)

For direct control of relays, magnetic valves, contactors, horns etc. Must not be operated with connected load (switching in series) as the oscillator will be destroyed when directly connected to mains. Not suitable for connection to PLC-inputs.

The domestic current is briefly reduced to below 1 mA after switching off the load, so that contactors with a retaining current lower than the permanently flowing domestic current of the electronics can be switched off reliably.

If VEGASWING is used as part of an overfill protection acc. to WHG, the regulations of the general inspection approval Z-65.11-14 must be observed.

Floating relay output (E80 R)



Power supply:
20 ... 250 V AC, 50/60 Hz
20 ... 60 V DC
(for further information see Technical data)

Is used to switch external voltage sources to relays, contactors, magnetic valves, diodes, horns etc.

If VEGASWING is used as part of an overfill protection acc. to WHG, please observe the additional regulations of the inspection approval Z-65.11-14.

Two-wire output (E80 Z, E80 Z7 Ex)

For connection to a VEGATOR signal conditioning instrument dto. Ex, VbF, WHG (with plastic and stainless steel housing)

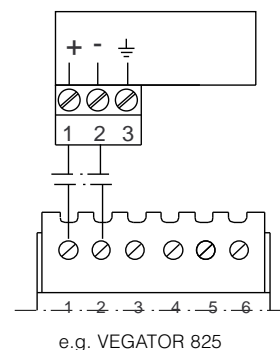
Power supply via the connected VEGATOR signal conditioning instrument (12 ... 36 V DC) (for further information see Technical data)

Switching example (valid for all suitable signal conditioning instruments and the stst-housing. The terminal coordination with the stst-housing corresponds to the plastic housing.

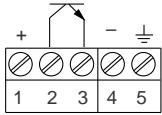
The signal lamp in the plastic housing lights generally when the probe is covered, independent of the mode adjusted in the signal conditioning instrument.

Observe the operating instructions of the signal conditioning instrument.

When the VEGASWING is used in Ex-areas or as part of an overfill protection acc. to WHG or VbF, please observe the superimposed regulations of the conformity certificate PTB-no. Ex-92.C.2141 or Ex-92.C.2181 or the type approval 01/PTB-no. III B/S 2175 F or of the test certificate PA-VI 810.74. If the VEGASWING with oscillator E80 Z Ex or E80 Z7 Ex should be operated directly on the analog input of a DCS, safety barrier type 145 must be connected (PTB-no. Ex-95.B.2038).



Floating transistor output (E80 T)
(plastic or stainless steel housing)

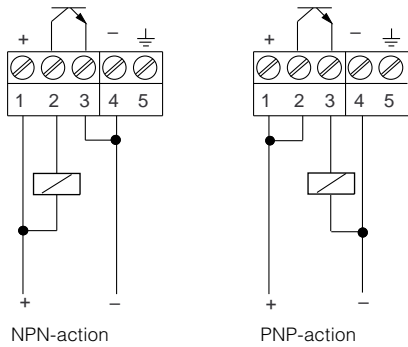


Power supply:
10 ... 55 V DC

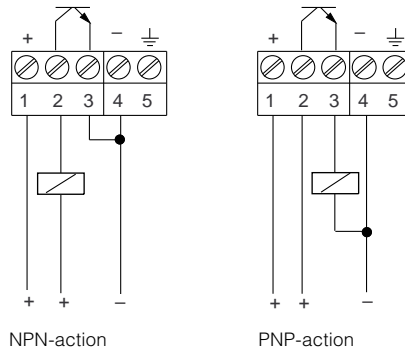
(for further information see following switching examples as well as Technical data)

Is used to control relays, contactors, magnetic valves, signal lamps, horns as well as DCS-inputs. The shown switching examples are valid for plastic housing. The terminal coordination of the stst-housing corresponds to the plastic housing. However the stst-housing has a separate screw terminal for connection of earth; function earth is deleted.

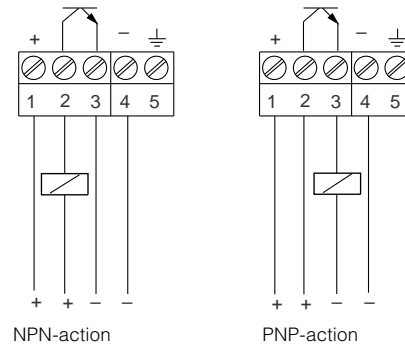
Switching examples



The transistor switches the supply voltage of the oscillator to the binary input of a PLC or to an electrical load. Due to the different connections of the consumer (load) PNP- or NPN-action is available.

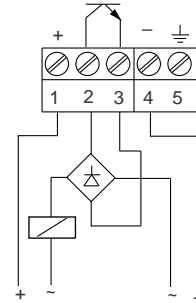


The transistor switches a second voltage source with same reference potential to the binary input of a DCS or to an electrical load. Due to the various connection of the consumer (load) PNP- or NPN-action is available.

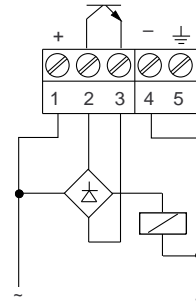


The transistor switches a second, galvanically separated voltage source to the binary input of a DCS or to an electrical load. Due to the various connection of the consumer (load) PNP- or NPN-action is available.

Control of alternating current loads



The transistor switches a galvanically separated alternating voltage 10 ... 42 V AC to a load.



The transistor switches an alternating voltage 10 ... 42 V AC, which is also power supply to a load.

Note

The transistor outputs of several VEGASWING can be connected in series or in parallel, to combine their signals logically. The wiring should be carried out such that terminal 2 always carries higher voltage against terminal 3.

4.4 Signal conditioning instruments series 500 and series 600

If only one channel should be used on a VEGATOR signal conditioning instrument, connect a resistor of 1 k Ω (0,5 W) to the unused connection pin of the second channel. The resistor avoids the output of a fault signal triggered by a missing sensor.

A transistor output operating in parallel is available to each relay output.

Reset of alarm functions

The failure relay of VEGATOR 536 can be used as second level relay for a signaller (horn etc.). An additional external key-switch can be connected to VEGATOR 536 to deactivate the connected signaller (horn, lamp etc.). In case of a level alarm (e.g. reaching of the max. permissible level). This key can deactivate a level alarm. In case of an interference (e.g. line break) the alarm is not deleted.

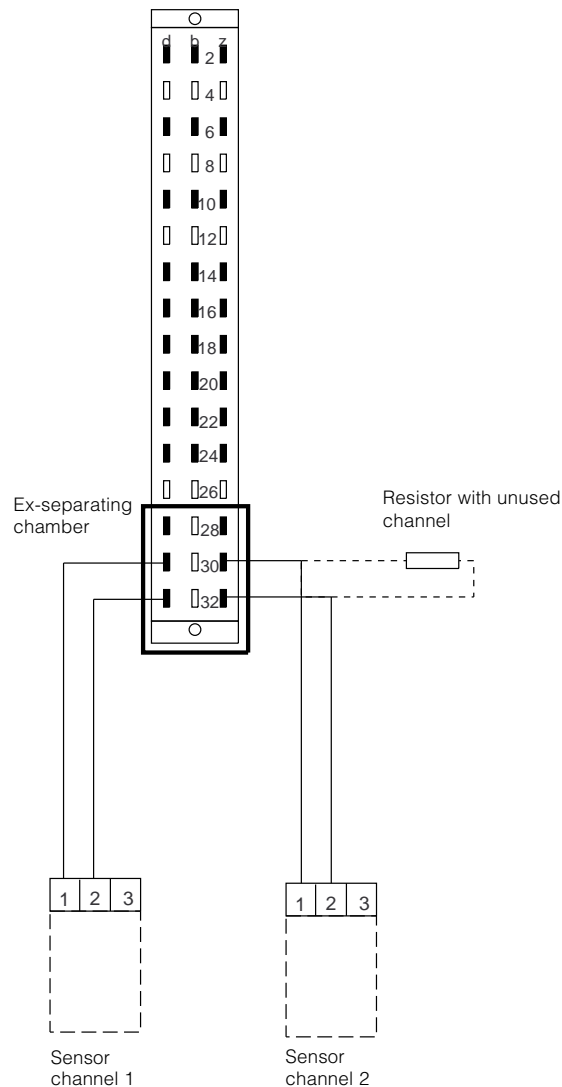
When the key is connected, the failure relay has the same function than the level relay, however the failure relay can be reset by pushing the key for reset of alarm functions.

If an acoustic warning system is activated when the max. level is reached, this can be switched off by turning the key for reset of alarm functions. The second output (level relay) signals to the process control when max. level is reached.

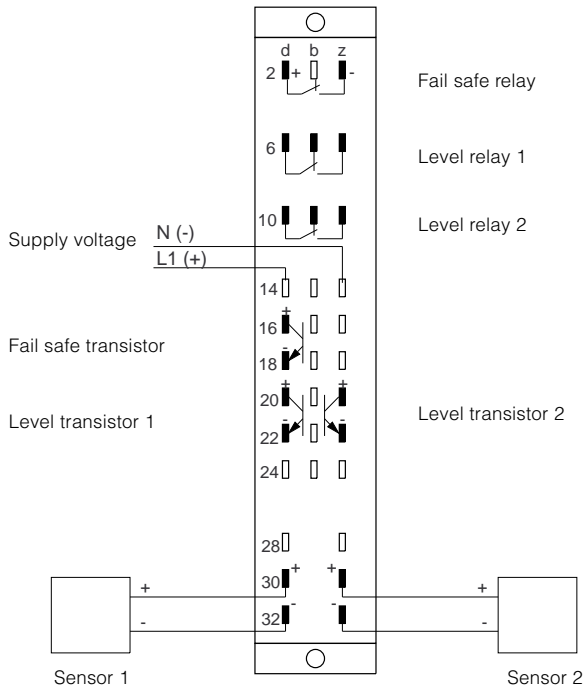
Note

If strong electromagnetic interference is expected, we recommend to use screened cable. The screening must be earthed at one end on the sensor side. The following figures show the currentless condition.

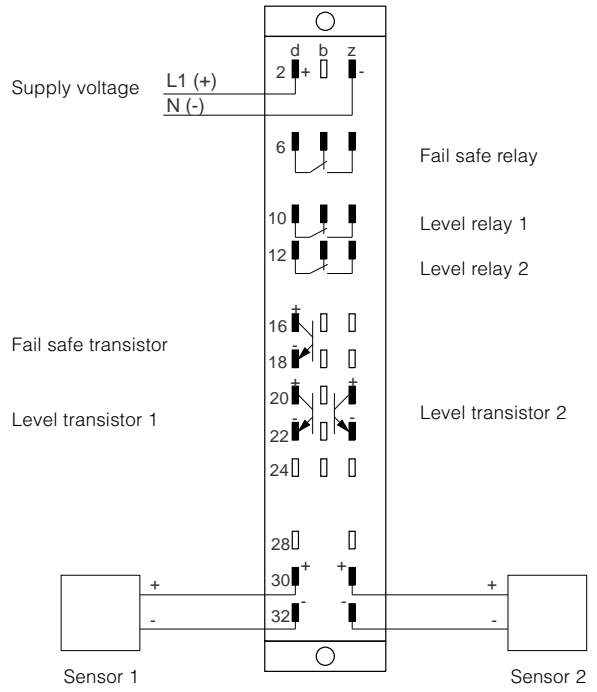
Module with multipoint connector to DIN 41 612 for carrier (rear view)



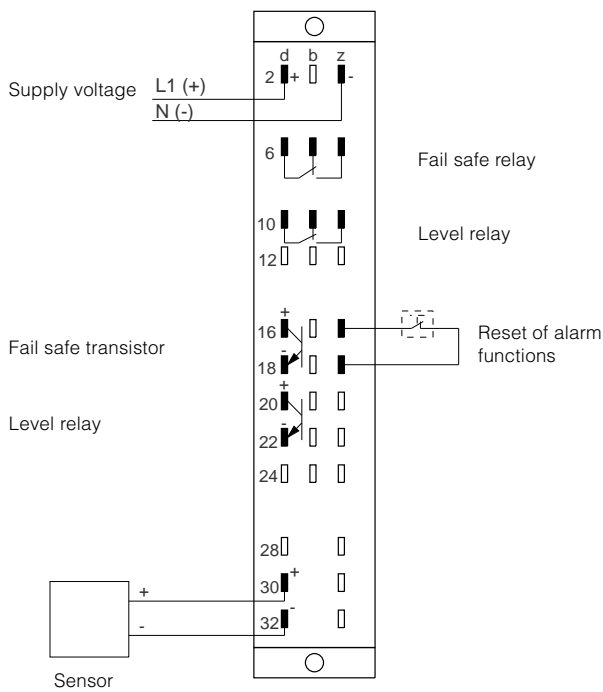
VEGATOR 534 Ex



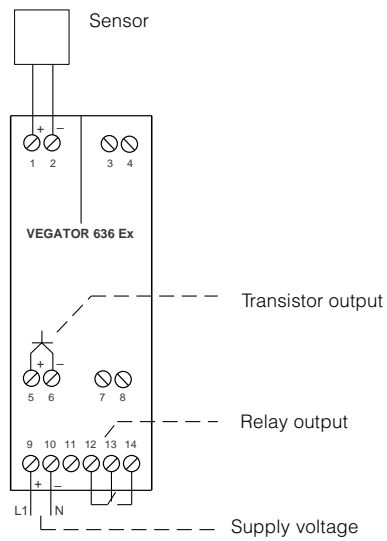
VEGATOR 537 Ex



VEGATOR 536 Ex



VEGATOR 636 Ex



5 Order code

5.1 VEGAVIB

VEGAVIB 41 and 43

Electronics

- C Non-contact
- R Relay output floating
- T Transistor output NPN/PNP

Mechanical connection

- G Thread G 1 A
- N Thread NPT 1"

Product temperature

- T up to max. 100°C
- H up to max. 150°C (with temperature adapter)

VIB41.X [] [] [] [] VVN [] [] Order no. for VEGAVIB 41

VIB43.X [] [] [] [] VVN [] [] Order no. for VEGAVIB 43

VEGAVIB 51, 52 and 53

Electronics

- C Non-contact
- R Relay output floating
- T Transistor output NPN/PNP
- Z Two-wire output for VEGATOR

Mechanical connection

- G Thread G 1 A
- N Thread NPT 1"

Material mechanical connection

- K Plastic (not VEGAVIB 53)
- A 1.4301 (at VEGAVIB 53 Standard)

Adjustment

- N Standard
- W For detection of solids in water ¹⁾

Product temperature

- T up to max. 100°C (VEGAVIB 52 up to 80°C)
- H up to max. 150°C (with temp. adapter.)

VIB51.X [] [] [] [] A [] [] Order no. for VEGAVIB 51

VIB52.X [] [] [] [] A [] [] Order no. for VEGAVIB 52

VIB52.X [] [] [] [] A [] [] Order no. for VEGAVIB 52

1) only in conjunction with material mechanical connection 1.4301

VEGAVIB 51. Ex..., 52. Ex... and 53. Ex...

Electronics

- C Non-contact
- R Relay output floating
- T Transistor output NPN/PNP
- Z Two-wire output for VEGATOR

Approval ¹⁾

- EXS.X Dust Ex Zone 10
- EX.X CENELEC EEx ia IIC ²⁾
- EX.K StEx Zone 10 and CENELEC EEx ia IIC ²⁾

Mechanical connection

- G Thread G 1 A
- N Thread NPT 1"

Product temperature

- T up to max. 100°C
- H up to max. 150°C (with temp.adapter)

VIB51 [] [] [] [] AAN [] [] Order no. for VEGAVIB 51. Ex...

VIB52 [] [] [] [] AAN [] [] Order no. for VEGAVIB 52. Ex...

VIB53 [] [] [] [] AAN [] [] Order no. for VEGAVIB 53. Ex...

1) in conjunction with VEGAVIB 52 only approval EX.X (CENELEC EEx ia IIC)

2) only in conjunction with electronics Z for connection to a VEGATOR signal conditioning instrument

5.2 VEGASWING

VEGASWING 71

Mechanical connection / Material

- GV Thread G 1 A / 1.4571
- NV Thread NPT 1" / 1.4571

Electronics

- T Transistor output NPN/PNP

Electrical connection

- S Plug
- K Connection cable (2 m)

SWING71.X [] [] [] [] Order-no. for VEGASWING 71

VEGASWING 81

Mechanical connection

- G1 Thread G 1 A
- N1 Thread NPT 1"
- K1 Cone DN 25 with compression nut
- R4 Bolting DN 40
- R5 Bolting DN 50
- C1 Tri-Clamp 1,5"
- C2 Tri-Clamp 2"
- F5 Flange DIN DN 50 PN 40
- F6 Flange DIN DN 50 PN 40 coated
- F2 Flange ANSI 2" 150 psi
- F3 Flange ANSI 2" 150 psi coated
- F8 Special flange

Electronics

- C Non-contact
- R Relay output floating
- T Transistor output NPN/PNP
- Z Two-wire output

Material mechanical connection and transducer

- V 1.4571 or 1.4581
- A Hastelloy C4 (only G1)
- G 1.4571 with Hastelloy C4 plated (only F5)
- H ECTFE coated (only F3 and F6)

Product temperature

- A up to max. 100°C
- Z up to max. 150°C (with temp. adapter)

SWING81.X [] [] [] 5 [] [] Order-no. for VEGASWING 81

VEGASWING 81 WHG, VbF, Ex

Mechanical connection

- G1 Thread G 1 A
- N1 Thread NPT 1"
- K1 Cone DN 25 with compression nut ¹⁾
- R4 Bolting DN 40 ¹⁾
- R5 Bolting DN 50 ¹⁾
- C1 Tri-Clamp 1,5" ¹⁾
- C2 Tri-Clamp 2" ¹⁾
- F5 Flange DIN DN 50 PN 40
- F6 Flange DIN DN 50 PN 40 coated
- F2 Flange ANSI 2" 150 psi
- F3 Flange ANSI 2" 150 psi coated
- F8 Special flange

Electronics

- C Non-contact ²⁾
- R Relay output floating ²⁾
- T Transistor output NPN/PNP ²⁾
- Z Two-wire output ³⁾

Approvals

- .A WHG
- EX.X CENELEC EEx ia IIC ⁴⁾
- EE.C WHG, VbF, PTB Zone 0 ⁴⁾

Material mechanical connection and transducer

- V 1.4571 bzw. 1.4581
- A Hastelloy C4 (only bei G1)
- G 1.4571 with Hastelloy C4 plated (only F5)
- H ECTFE coated (only bei F3 and F6)

Product temperature

- A up to max. 100°C
- Z up to max. 150°C (with temp. adapter)

SWING81 | | | 5 | | |

Order-no. for VEGASWING 81 WHG, VbF, Ex

- 1) only in conjunction with approval EX.X (CENELEC)
- 2) only in conjunction with approval .A (WHG)
- 3) only in conjunction with approval EX.X (CENELEC) and EX.C (WHG, VbF, PTB Zone 0)
- 4) only in conjunction with electronics Z for connection to a VEGATOR signal conditioning instrument

VEGASWING 81 enamelled

Mechanical connection

- F6 Flange DIN DN 50 PN 40 made of steel enamelled
- F8 Special flange

Electronics

- C Non-contact ¹⁾
- R Relay output floating ¹⁾
- T Transistor output NPN/PNP ¹⁾
- Z Two-wire output ²⁾

Approvals

- X without
- .A WHG
- EX.X CENELEC EEx ia IIC ³⁾
- EE.C WHG, VbF, PTB Zone 0 ³⁾

Product temperature

- A up to max. 100°C
- Z up to max. 150°C (with temp adapter)

SWING81 | | | 5 | | | E |

Order-no. for VEGASWING 81 WHG, VbF, Ex enamelled

- 1) not in conjunction with approval EX.X (CENELEC) and EX.C (WHG, VbF, PTB Zone 0)
- 2) only in conjunction with approval EX.X (CENELEC) and EX.C (WHG, VbF, PTB Zone 0)
- 3) only in conjunction with electronics Z for connection to a VEGATOR signal conditioning instrument

VEGASWING 82

Electronics

- C Non-contact
- R Relay output floating
- T Transistor output NPN/PNP
- Z Two-wire output

SWING82.XG1 | | | 5 |

Order-no. for VEGASWING 82

VEGASWING 83

Mechanical connection

- G1 Thread G 1 A
- N1 Thread NPT 1"
- K1 Cone DN 25 with compression nut
- R4 Bolting DN 40
- R5 Bolting DN 50
- C1 Tri-Clamp 1,5"
- C2 Tri-Clamp 2"
- F5 Flange DIN DN 50 PN 40
- F6 Flange DIN DN 50 PN 40 coated
- F2 Flange ANSI 2" 150 psi
- F3 Flange ANSI 2" 150 psi coated
- F8 Special flange

Electronics

- C Non-contact
- R Relay output floating
- T Transistor output NPN/PNP
- Z Two-wire output

Material mechanical connection and transducer

- V 1.4571 bzw. 1.4581
- A Hastelloy C4 (only G1)
- G 1.4571 with Hastelloy C4 plated (only bei F5)
- H ECTFE coated (only F3 and F6)

Product temperature

- A up to max. 100°C
- Z up to max. 150°C (with temp. adapter)

Locking

- X without
- G with G 1 1/2" A
- N with NPT 1 1/2"

SWING83.X | | | 5 | | |

Order-no. for VEGASWING 83

VEGASWING 83 WHG, VbF, Ex

Mechanical connection

- G1 Thread G 1 A
- N1 Thread NPT 1"
- K1 Cone DN 25 with compression nut ¹⁾
- R4 Bolting DN 40 ¹⁾
- R5 Bolting DN 50 ¹⁾
- C1 Tri-Clamp 1,5" ¹⁾
- C2 Tri-Clamp 2" ¹⁾
- F5 Flange DIN DN 50 PN 40
- F6 Flange DIN DN 50 PN 40 coated
- F2 Flange ANSI 2" 150 psi
- F3 Flange ANSI 2" 150 psi coated
- F8 Special flange

Electronics

- C Non-contact ²⁾
- R Relay output floating ²⁾
- T Transistor output NPN/PNP ²⁾
- Z Two-wire output ³⁾

Approvals

- .A WHG
- EX.X CENELEC EEx ia IIC ⁴⁾
- EE.C WHG, VbF, PTB Zone 0 ⁴⁾

Material mechanical connection and transducer

- V 1.4571 bzw. 1.4581
- A Hastelloy C4 (only bei G1)
- G 1.4571 with Hastelloy C4 plated (only F5)
- H ECTFE coated (only F3 and F6)

Product temperature

- A up to max. 100°C
- Z up to max. 150°C (with temp. adapter)

Locking

- X without
- G with G 1 1/2 A
- N with NPT 1 1/2"

SWING83			5				
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Order-no. for VEGASWING 83 WHG, VbF, Ex

- 1) only in conjunction with approval EX.X (CENELEC)
- 2) only in conjunction with approval .A (WHG)
- 3) only in conjunction with approval EX.X (CENELEC) and EX.C (WHG, VbF, PTB Zone 0)
- 4) only in conjunction with electronics Z for connection to a VEGATOR signal conditioning instrument

VEGASWING 83 enamelled

Mechanical connection

- F6 Flange DIN DN 50 PN 40 made of steel enamelled
- F8 Special flange

Electronics

- C Non-contact ¹⁾
- R Relay output floating ¹⁾
- T Transistor output NPN/PNP ¹⁾
- Z Two-wire output ²⁾

Approvals

- .X without
- .A WHG
- EX.X CENELEC EEx ia IIC ³⁾
- EE.C WHG, VbF, PTB Zone 0 ³⁾

Product temperature

- A up to max. 100°C
- Z up to max. 150°C (with temp. adapter)

SWING83			5	E			
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Order-no. for VEGASWING 83 WHG, VbF, Ex enamelled

- 1) not in conjunction with approval EX.X (CENELEC) and EX.C (WHG, VbF, PTB Zone 0)
- 2) only in conjunction with approval EX.X (CENELEC) and EX.C (WHG, VbF, PTB Zone 0)
- 3) only in conjunction with electronics Z for connection to a VEGATOR signal conditioning instrument

5.3 Signal conditioning instruments

VEGATOR 534 Ex

Plug-in (Ex 33 S)

- X without
- A Wire-Wrap, Standard connection 1,0 mm x 1,0 mm
- B Plug connection 2,8 mm x 0,8 mm
- C Termi-point Standard connection 1,6 mm x 0,8 mm
- D Soldering connection

TOR534EX.	
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Order-no. for VEGATOR 534 Ex

VEGATOR 536 Ex

Approval

- X [EEx ia] IIC
- C [EEx ia] IIC, Overfill protection acc. to WHG and VbF (applied)

TOR536EX0.	
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Order-no. for VEGATOR 536 Ex

VEGATOR 537 Ex

Approval

- X [EEx ia] IIC
- C [EEx ia] IIC, Overfill protection acc. to WHG and VbF (applied)

TOR537EX0.	
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Order-no. for VEGATOR 537 Ex

VEGATOR 636 Ex

Approval

- X [EEx ia] IIC

TOR636EX0.	
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Order-no. for VEGATOR 636 Ex

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