

Vert-X 31E - 24V / 0.1 - 10V

Applications

- Concrete pump
- Access control system
- Fork lift

Features general

- High protection class IP68
- Compact dimensions
- Non-contacting measuring method
- Very long life
- High accuracy of measurement
- Applications under adverse ambient conditions possible (humidity, dampness, dust, vibrations etc.)
- Full resolution and accuracy at programmed electrical angle
- Detection of magnetic loss (with safety flag)

Features MH-C

- Resolution of 12bit
- Lower price than MH-C2

Features MH-C2

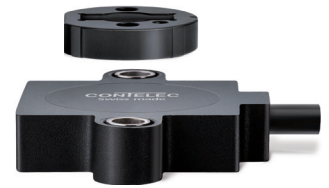
- Resolution of 14bit
- Index point(s), sense of rotation and angle settable resp. programmable by customer (optional)

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Sensor principle		MH-C	MH-C2
Electrical data			
Measuring range	°	0 ... 360	0 ... 360
Indep. linearity (typ.)	% of meas. range	±0.3	±0.3
Max. hysteresis	°	0.1	0.1
Resolution	bit	12	14
Max. repeatability	°	0.1	0.1
Sample rate fast mode	kHz	(5)	(2)
Sample rate slow mode	kHz	1.66	0.5
System propagation delay fast mode	µs	(800)	(800)
System propagation delay slow mode	µs	4600	2500
Max. temperature coefficient of the output signal	ppm/K	100	100
MTTFd / MTBF	years	185 / 185	147 / 147
Power supply voltage	VDC	10.8 ... 35	11 ... 35
Current consumption without load (typ.) fast mode	mA	(19)	(20)
Current consumption without load (typ.) slow mode	mA	14	15
Min. ohmic load at output	kOhm	10	10
Max. capacitive load at output	nF	100	100
Reverse polarity protection of power supply		yes	yes
Electrical connection		Cable 3pole	Cable 3pole
Cross section of single wires	mm ²	0.56 (AWG20)	0.56 (AWG20)
Redundancy feasible		no	no
Electrical connection redundant		-	-
Cross section of single wires redundant	mm ²	-	-
Mechanical data			
Mechanical range	°	360 (continuous)	360 (continuous)
Protection class		IP68	IP68
Min. life	movements	no limitation	no limitation
Operating & storage temperature	°C	-40 ... +85	-40 ... +85
EN 60068-2-6 Vibration (Amax = 0.75mm, f = 5...2000Hz)	g	50	50
EN 60068-2-27 Shock	g	200	200
Standards			
EN 55022 class B, Emission radiated (30...230MHz)	dB(µV/m)	max. 30	max. 30
EN 55022 class B, Emission radiated (230...1000MHz)	dB(µV/m)	max. 37	max. 37
EN 55022 class B, Emission conducted (0.15...0.5MHz)	dB(µV)	max. 56 ... 46	max. 56 ... 46
EN 55022 class B, Emission conducted (0.5...5MHz)	dB(µV)	max. 46	max. 46
EN 55022 class B, Emission conducted (5...30MHz)	dB(µV)	max. 50	max. 50
EN 61000-4-2, ESD (contact discharge / air discharge)	kV	±4 / ±8	±4 / ±8
EN 61000-4-3, Immission HF radiated (80...1000MHz/1.4...2.7GHz) V/m		30	30
EN 61000-4-4, Burst (on all lines)	kV	±1	±1
EN 61000-4-5, Surge (lines to ground)	kV	±1	±1
EN 61000-4-6, Immission HF conducted (0.15...80MHz)	Vemk	10	10
EN 61000-4-8, Immission magnetic field (50Hz)	A/m	300	300
EN 60393-1 Insulation resistance (500VDC, 1bar, 2s)	GOhm	20	20
EN 60393-1 Dielectric strength (VAC, 50Hz, 1min, 1bar)	kV	1	1



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Ordering code

*** Switch outputs**
 Please define number (max. 127), position and width of the pulses.

Output characteristics	
Positive gradient CW	Standard 1
Positive gradient CCW	Optional 2
Positive gradient CW with 1 switch output*	Optional A
Positive gradient CCW with 1 switch output*	Optional B
Positive gradient CW with 2 switch outputs*	Optional C
Positive gradient CCW with 2 switch outputs*	Optional D
Sense of rotation settable	Optional E
Zero point & sense of rotation settable	Optional F
Middle point & sense of rotation settable	Optional G
Start + end point & sense of rotation settable	Optional H
Programmable with Vert-X EasyAdapt	Optional P

Electrical connection	
4	Standard Cable 3pole
6	Optional Cable 6pole
9	Optional Special cable

Length of cable	
02	Standard 1.0m
06	Optional 3.0m
10	Optional 5.0m
99	Optional Special length

Output signal	
0,1VDC ... 10VDC	Standard 1

Power supply voltage	
24VDC	Standard 1

Vert-X 3 1 E 6 a 7 3 6 1 1 1 4 0 2

Electrical angle	
36	Standard Electrical angle 360°
xx	Optional 03 to 35 ; Declaration in 10° steps
99	Optional Special angle

Sensor principle	
7	MH-C
8	MH-C2

Mounting hole	
a	Standard Through-hole ø 4.4mm
b	Optional Through-hole ø 4.4mm with counterbore ø 7.4mm

Mechanical version	
31E5	Optional Magnetic actuator type 5
31E6	Standard Magnetic actuator type 6
31E7	Optional Magnetic actuator type 7
31E8	Optional Magnetic actuator type 8
31E9	Optional Special magnetic actuator

	MH-C	MH-C2
Custom magnetic actuator	X	X
Custom modification of the housing	X	X
Custom cable	X	X
Sample rate in fast mode	X	X
Switch functions TTL (max. 2)	-	X
Special characteristic curve	-	X
Special electrical angle within 30° to 360° (ex factory)	X	X
Electrical angle programmable (Software)	-	X
Start & end point settable (Additional wires)	-	X
Sense of rotation CW/CCW settable / programmable (Additional wires or Software)	-	X
Index point settable / programmable (Additional wires or Software)	-	X
Extended operating range, axial (without safety flag)	X	X

Options (on request)

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Vert-X 31E5

Accessories (incl.)

- None

Operating range/Air gap (A) Standard with safety flag

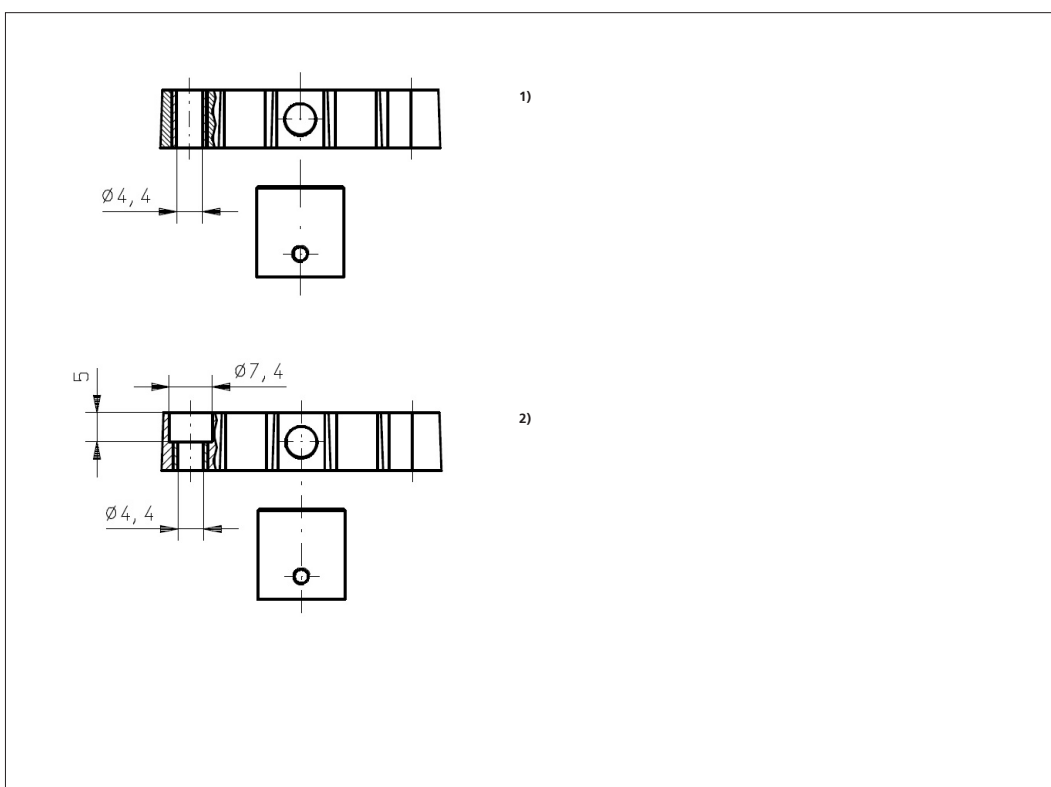
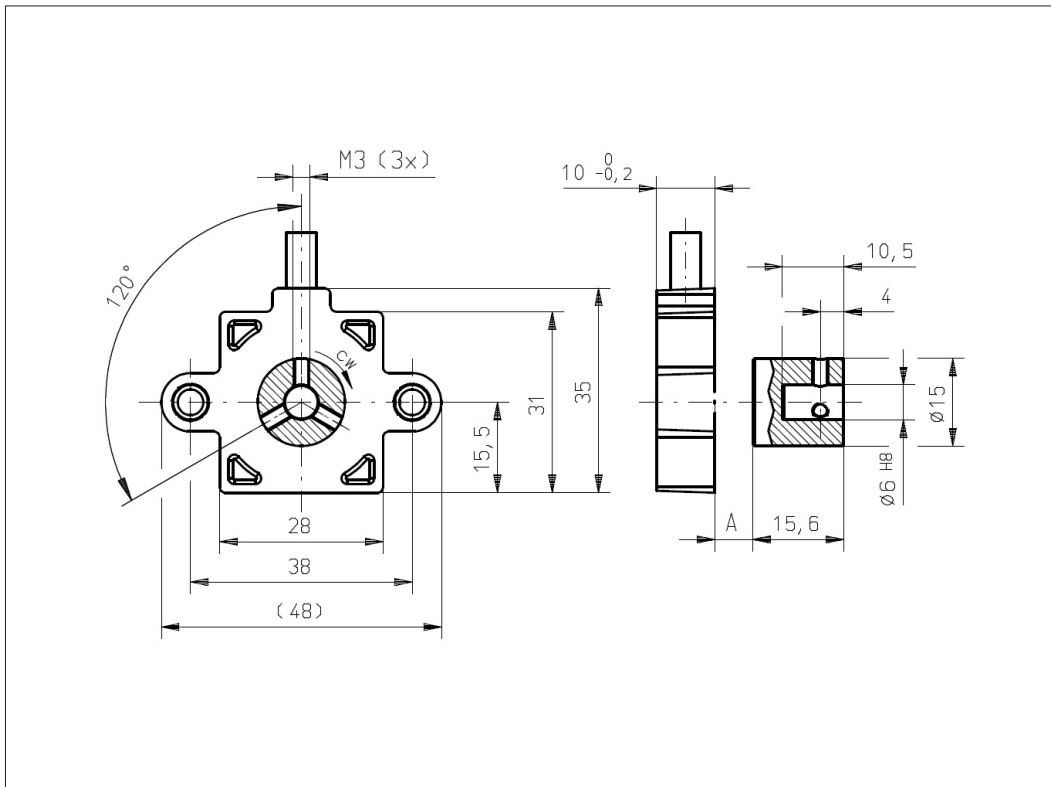
Single 0 ... 6.2mm

Extended without safety flag (Optional)

Single 0 ... 10.0mm

Features Safety Flag

- Detection of magnetic loss
- System shut-down in case of magnetic actuator out of valid operating range
- Recommended for safety relevant applications



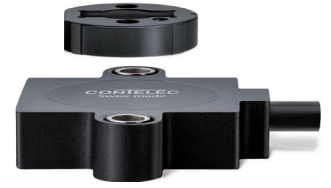
Vert-X 31E5axxx 11x xxx ¹⁾

Vert-X 31E5bxxx 11x xxx ²⁾

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Vert-X 31E6

Accessories (incl.)

- None

Operating range/Air gap (A) Standard with safety flag

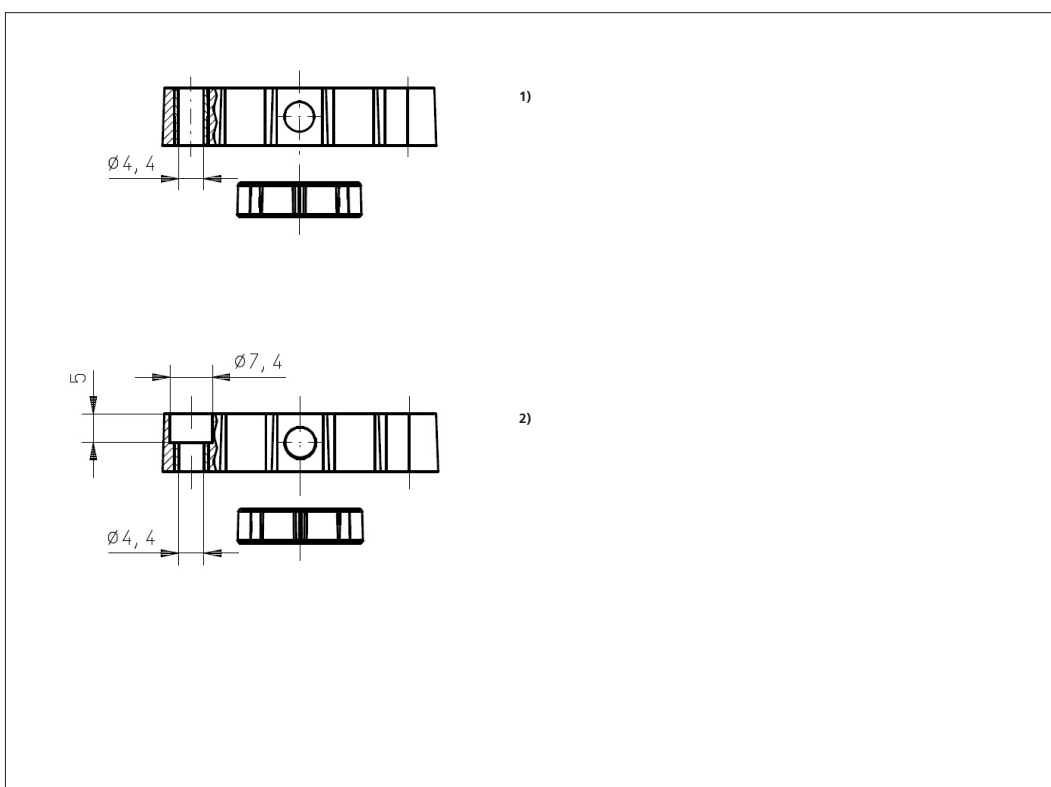
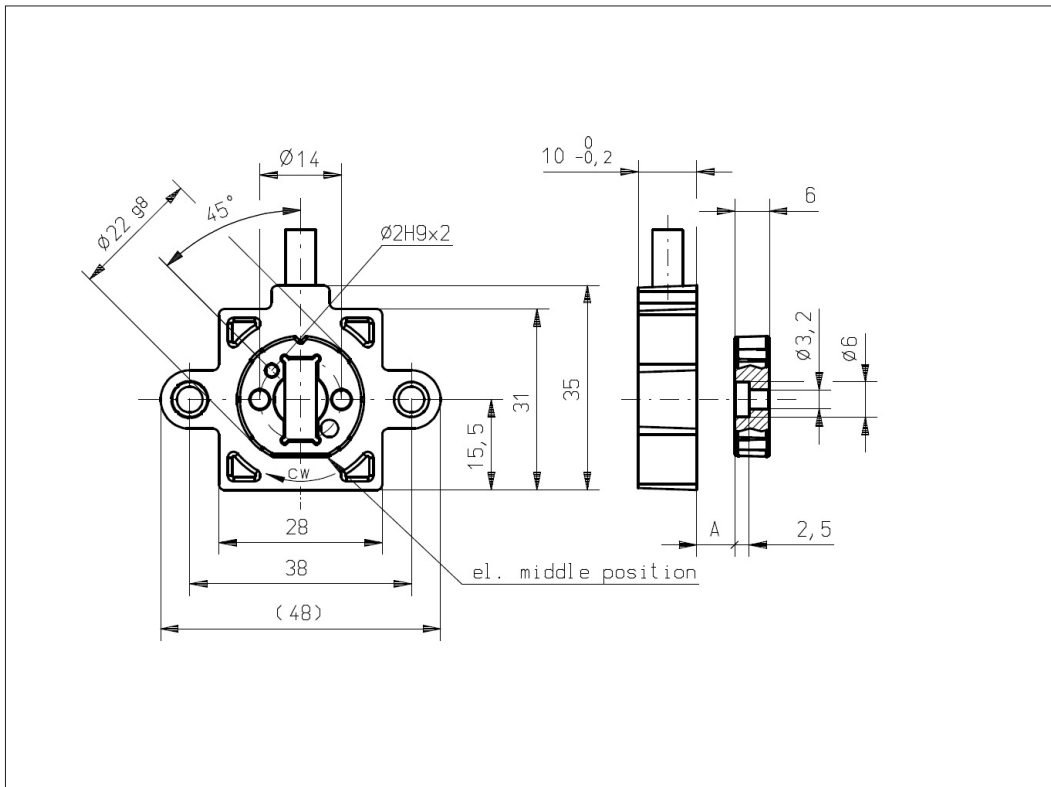
Single 0 ... 5.0mm

Extended without safety flag (Optional)

Single 0 ... 8.4mm

Features Safety Flag

- Detection of magnetic loss
- System shut-down in case of magnetic actuator out of valid operating range
- Recommended for safety relevant applications



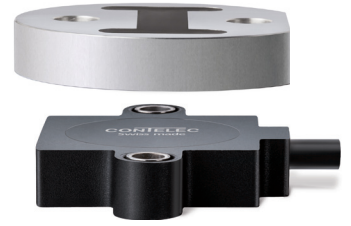
Vert-X 31E6axxx 11x xxx ¹⁾

Vert-X 31E6bxxx 11x xxx ²⁾

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Vert-X 31E7

Accessories (incl.)

- None

Operating range/Air gap (A) Standard with safety flag

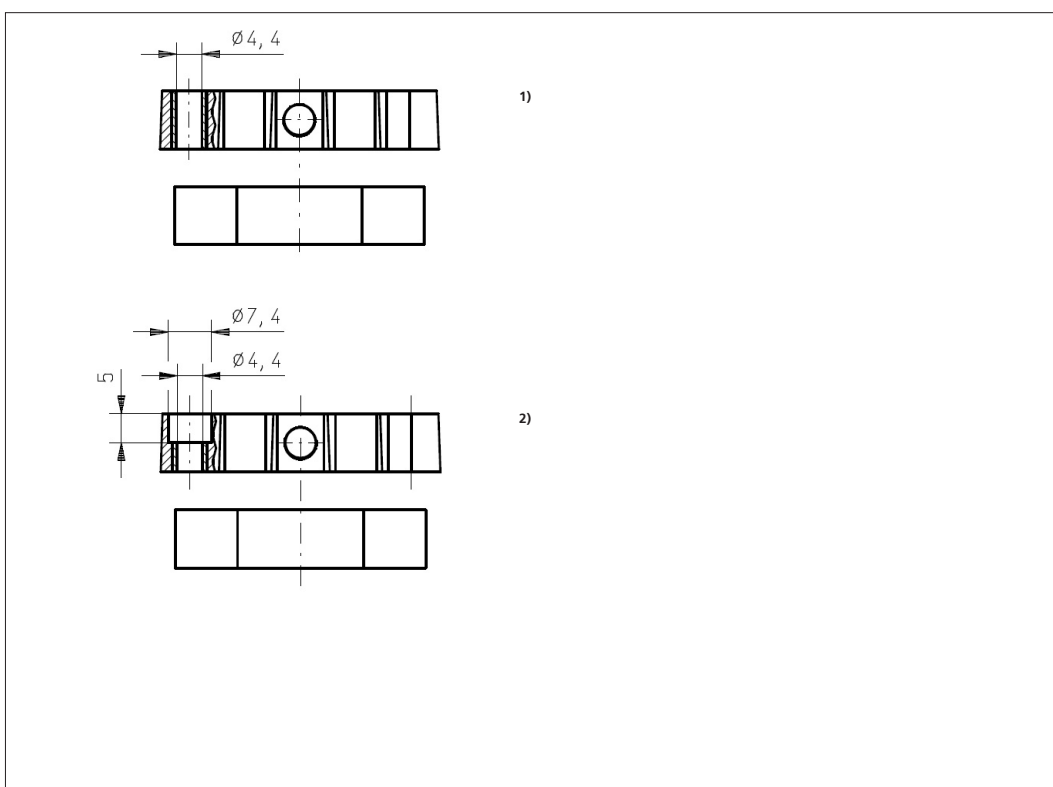
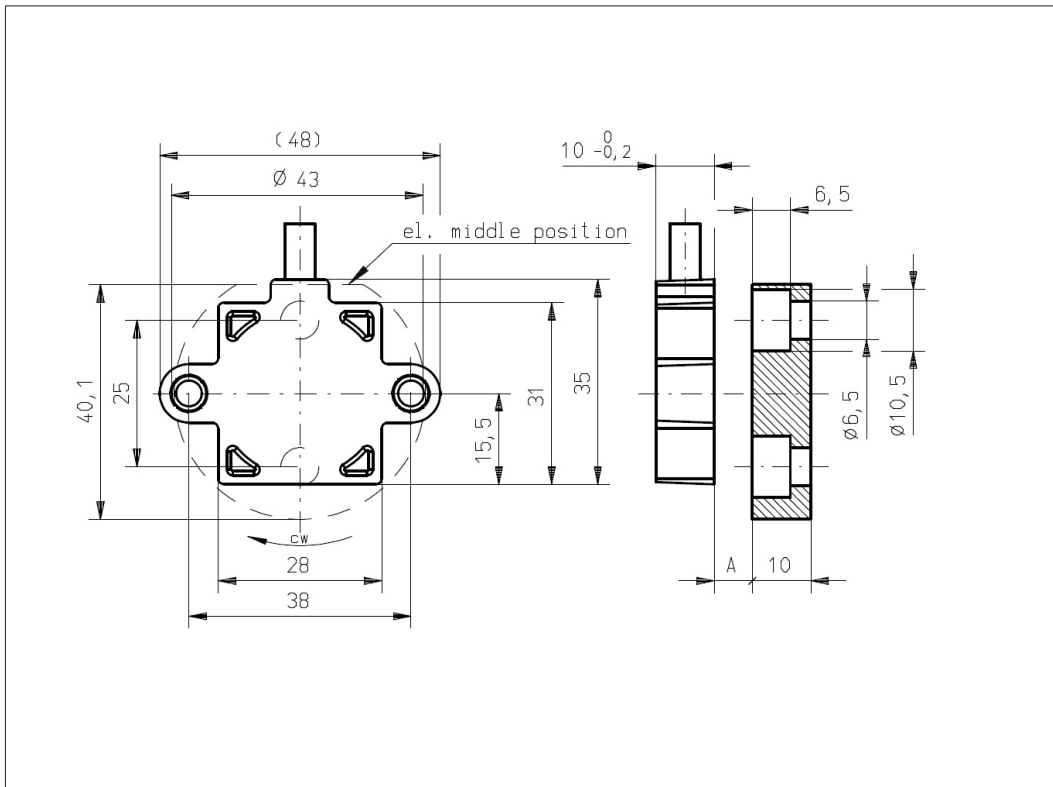
Single 0 ... 13.3mm

Extended without safety flag (Optional)

Single 0 ... 19.7mm

Features Safety Flag

- Detection of magnetic loss
- System shut-down in case of magnetic actuator out of valid operating range
- Recommended for safety relevant applications



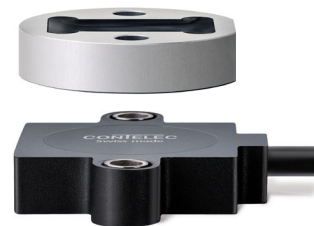
Vert-X 31E7axxx 11x xxx ¹⁾

Vert-X 31E7bxxx 11x xxx ²⁾

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Vert-X 31E8

Accessories (incl.)

- None

Operating range/Air gap (A) Standard with safety flag

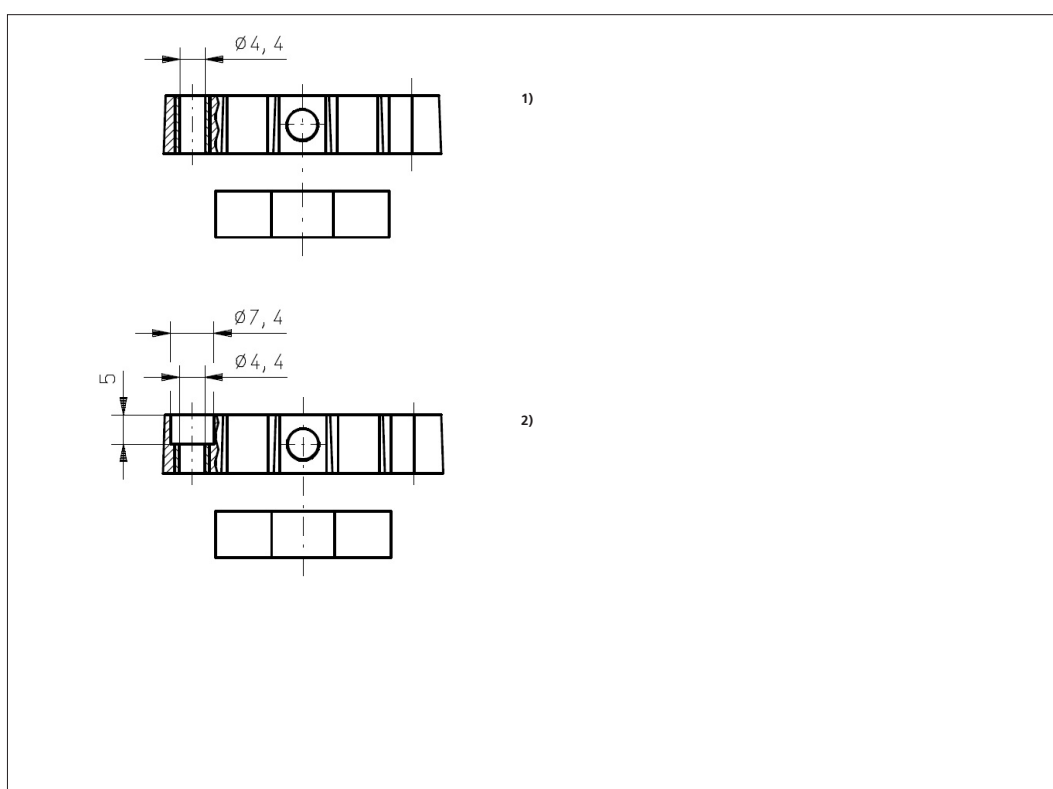
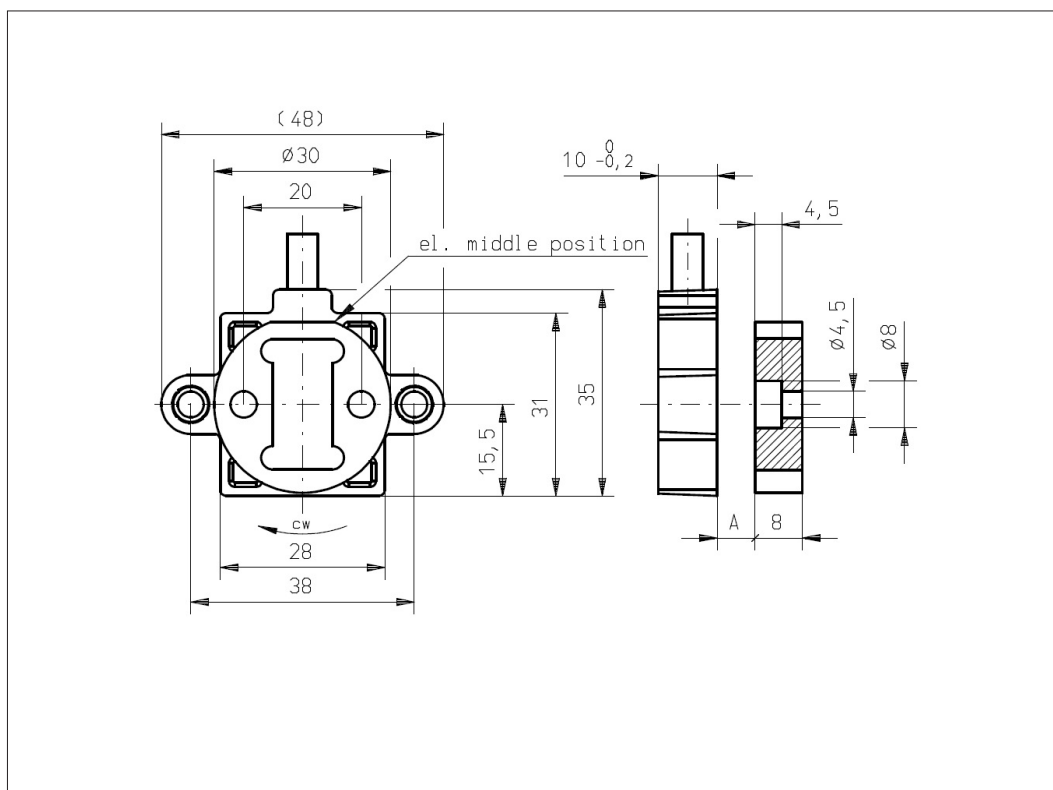
Single 0 ... 12.8mm

Extended without safety flag (Optional)

Single 0 ... 18.7mm

Features Safety Flag

- Detection of magnetic loss
- System shut-down in case of magnetic actuator out of valid operating range
- Recommended for safety relevant applications



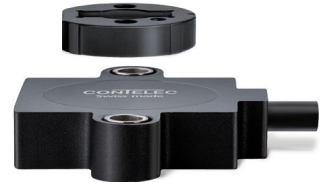
Vert-X 31E8axxx 11x xxx ¹⁾

Vert-X 31E8bxxx 11x xxx ²⁾

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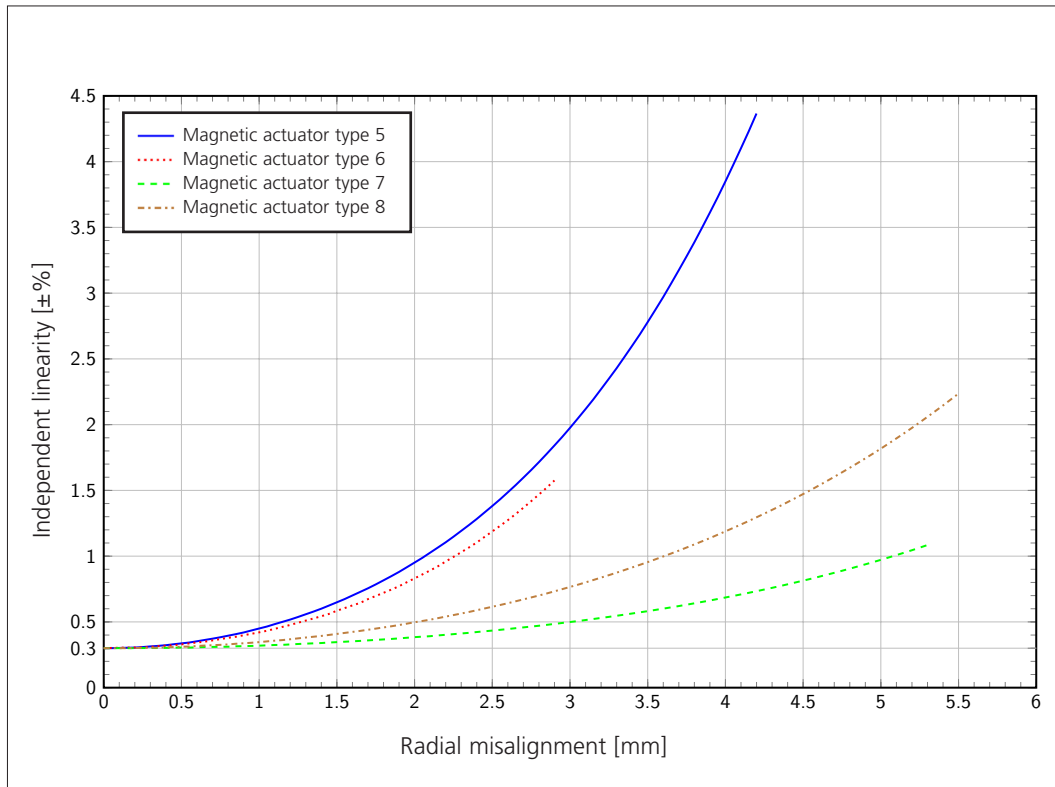
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Vert-X 31E

Indep. linearity with radial misalignment (@360°)



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