

Vert-X 31E 24V / 4 - 20mA

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

Features MH-C

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

Features MH-C2

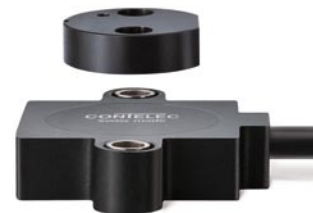
- Resolution of 14bit
- Index point(s), sense of rotation and angle settable resp. programmable by customer (optional)

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Sensor principle		MH-C	MH-C2
Electrical data			
Measuring range	°	0 ... 360	0 ... 360
Indep. linearity (without misalignment)	% of meas. range	±0.3	±0.3
Indep. linearity (with allowed misalignment @ 360°)	% of meas. range	±0.5	±0.5
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	16 ... 35	16 ... 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	0 ... 0.5	0 ... 0.5
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
IEC 68-2-6 Vibration (Amax = 0.75mm, f = 5 ... 2000 Hz)	g	50	50
IEC 68-2-27 Shock	g	200	200
Standards			
EN 55022 class B, Emission radiated (30... 230 MHz)	dB(µV/m)	max. 30	max. 30
EN 55022 class B, Emission radiated (230...1000MHz)	dB(µV/m)	max. 37	max. 37
EN 61000-4-2, ESD (contact discharge / air discharge)	kV	±4 / ±8	±4 / ±8
EN 61000-4-3, Immision HF radiated (80... 1000 MHz)	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, Immision HF conducted (0.15...80MHz)	Vemk	10	10
EN 61000-4-8, Immision magnetic field (50Hz)	A/m	300	300
IEC 60393-1 Insulation resistance (500VDC, 1bar, 2s)	GOhm	20	20
IEC 60393-1 Dielectric strength (VAC, 50Hz, 1min, 1bar)	kV	1	1



Vert-X 31E 24V / 4 - 20mA Ordering code

* Switch outputs

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

Output characteristics											
Positive gradient CW											
Positive gradient CCW											
Positive gradient CW with 1 switch output*											
Positive gradient CCW with 1 switch output*											
Positive gradient CW with 2 switch outputs*											
Positive gradient CCW with 2 switch outputs*											
Sense of rotation settable											
Zero point & sense of rotation settable											
Middle point & sense of rotation settable											
Start + end point & sense of rotation settable											
Programmable with Vert-X EasyAdapt											
Electrical connection											
4 Standard Cable 3pole											
6 Optional Cable 6pole											
9 Optional Special cable ; Special wires											
Length of cable											
02 Standard 1.0m											
06 Optional 3.0m											
10 Optional 5.0m											
99 Optional Special length											
Output signal											
4mA ... 20mA Standard 5											
Power supply voltage											
24VDC Standard 1											
Vert-X	3	1	E	6	a	7	3	6	1	5	1
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 Standard Magnetic actuator type 5											
31E6 Standard Magnetic actuator type 6											
31E7 Optional Magnetic actuator type 7											
31E9 Optional Special magnetic actuator											

	MH-C	MH-C2
Custom magnetic actuator	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

Options (on request)

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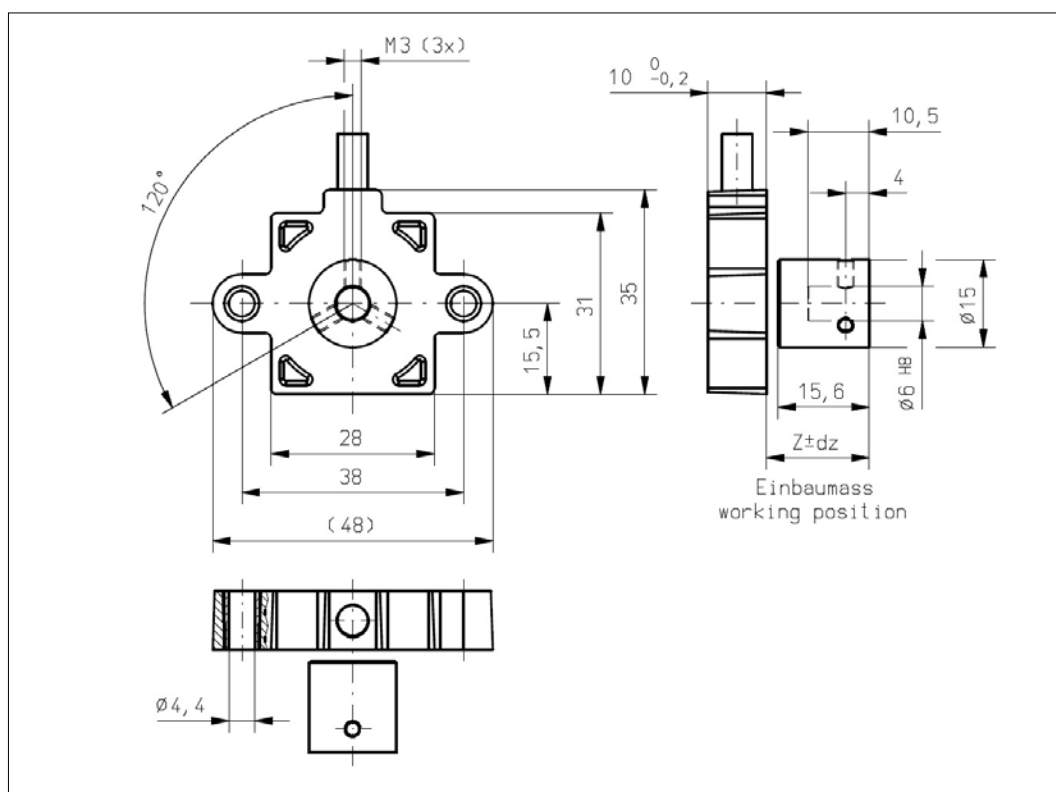
Vert-X 31E5axxx xxx 4xx **Vert-X 31E5axxx xxx 6xx**

Accessoires (incl.)

- None

**Working position (Z) and
max. permitted misalign-
ment of the magnetic
actuator**

see mounting information



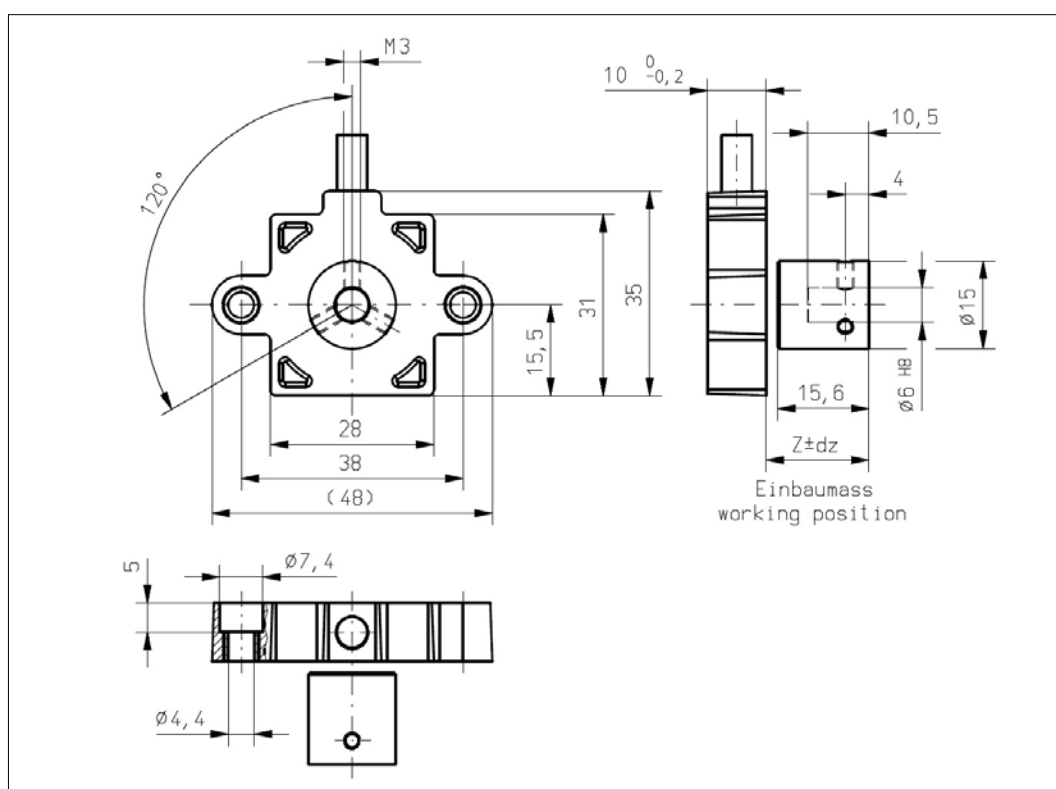
Vert-X 31E5bxxx xxx 4xx **Vert-X 31E5bxxx xxx 6xx**

Accessoires (incl.)

- None

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ment of the magnetic
actuator**

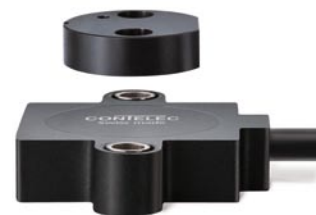
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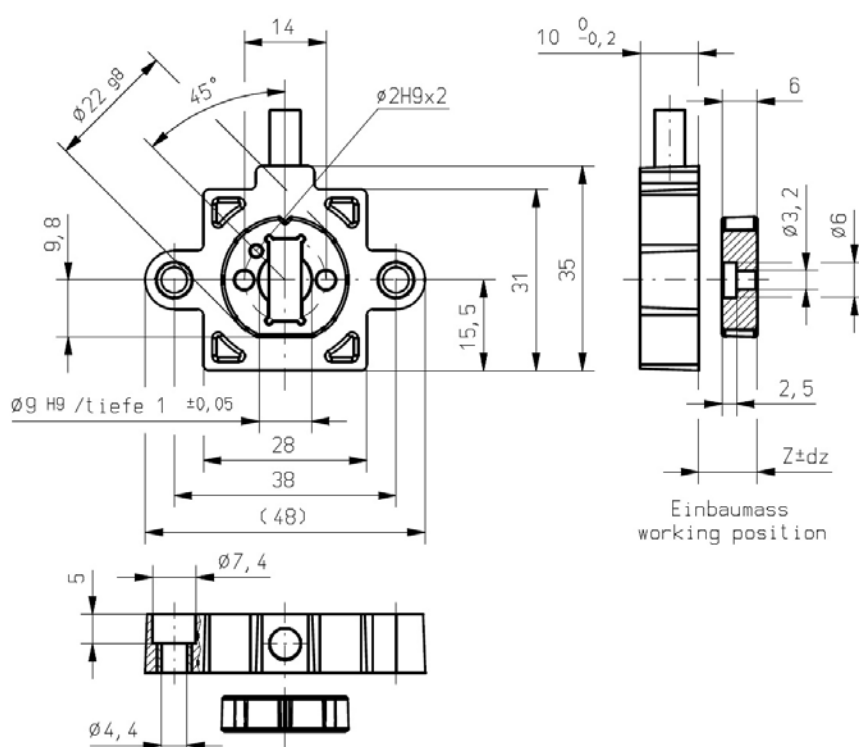
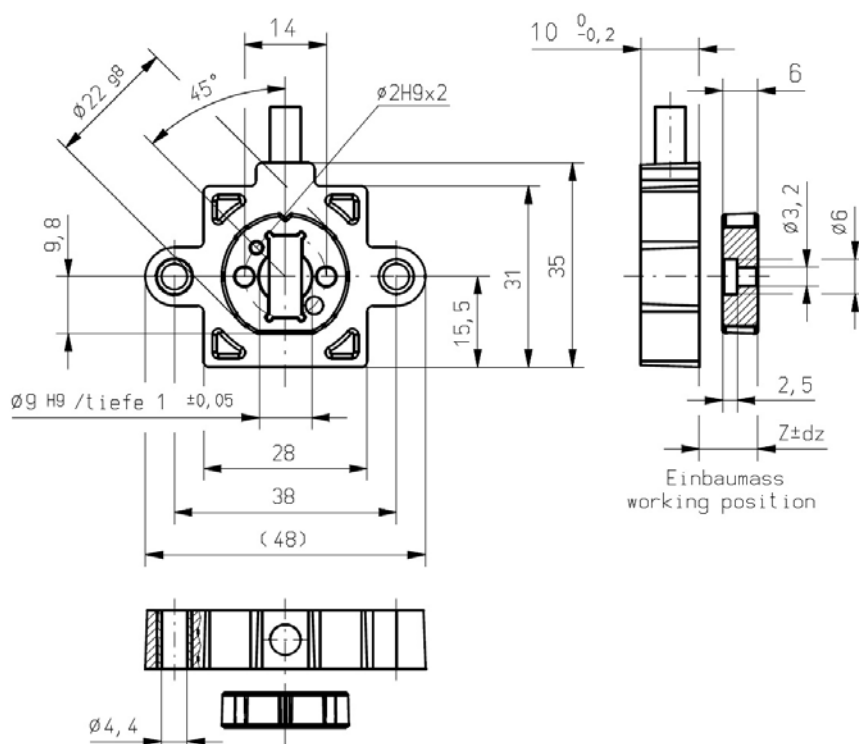
Vert-X 31E6axxx xxx 4xx **Vert-X 31E6axxx xxx 6xx**

Accessoires (incl.)

- None

Working position (Z) and max. permitted misalignment of the magnetic actuator

see mounting information



Vert-X 31E6bxxx xxx 4xx **Vert-X 31E6bxxx xxx 6xx**

Accessoires (incl.)

- None

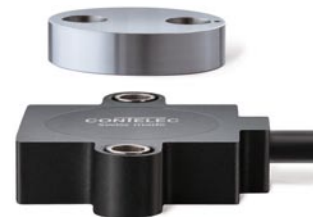
Working position (Z) and max. permitted misalignment of the magnetic actuator

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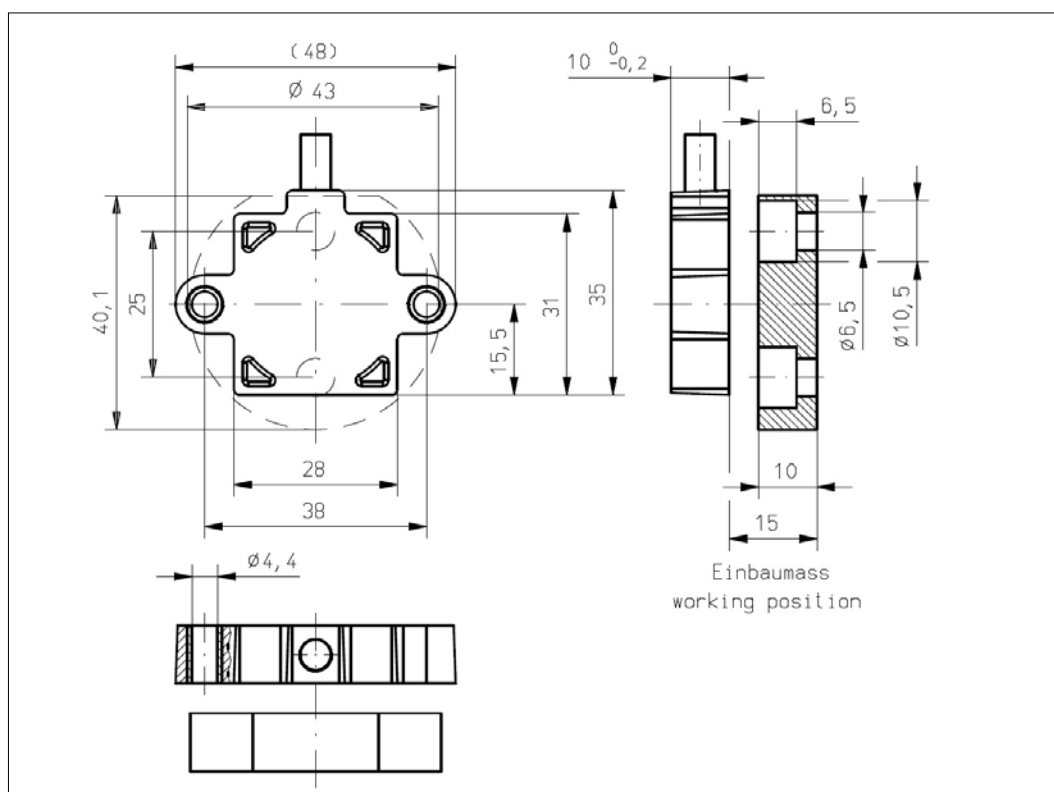
Vert-X 31E7axxx xxx 4xx **Vert-X 31E7axxx xxx 6xx**

Accessoires (incl.)

- None

**Working position (Z) and
max. permitted misalign-
ment of the magnetic
actuator**

see mounting information



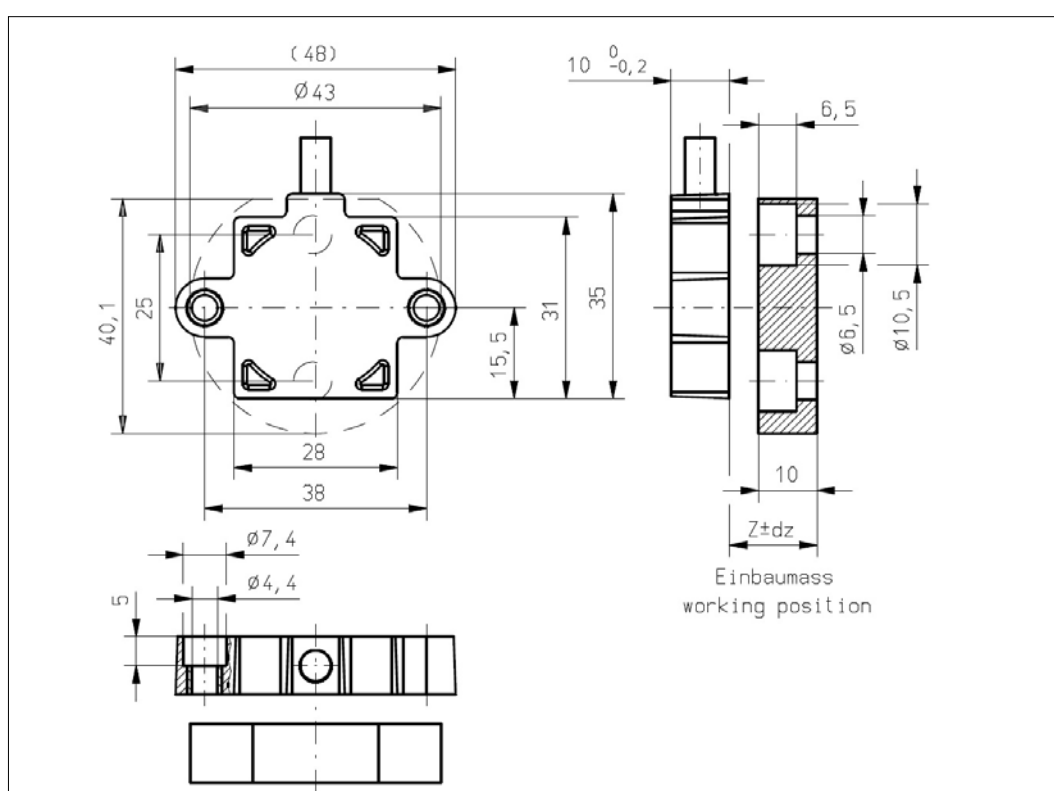
Vert-X 31E7bxxx xxx 4xx **Vert-X 31E7bxxx xxx 6xx**

Accessoires (incl.)

- None

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max. permitted misalign-
ment of the magnetic
actuator**

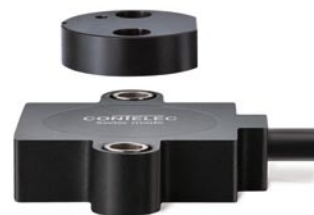
see mounting information



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Vert-X 31E5

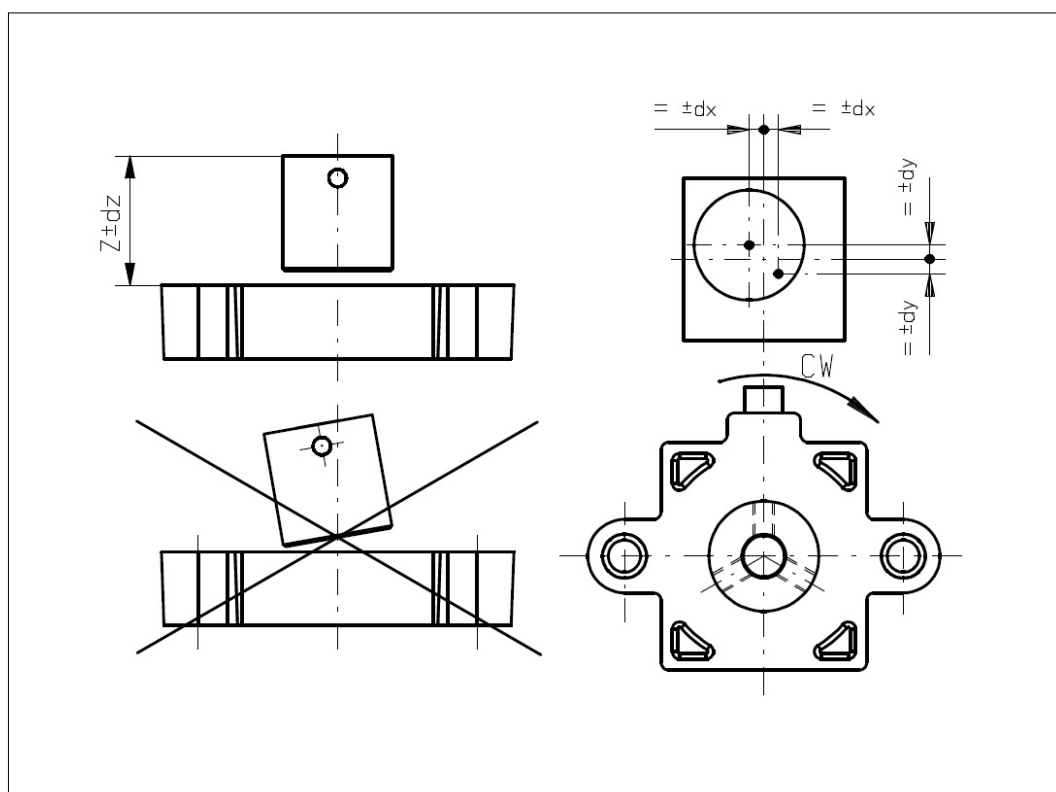
Mounting information

Working position (Z)

MH-C	17.50mm
MH-C2	17.50mm

Max. permitted misalignment of the magnetic actuator

dx	±0.50mm
dy	±0.50mm
dz	±1.00mm



Vert-X 31E6

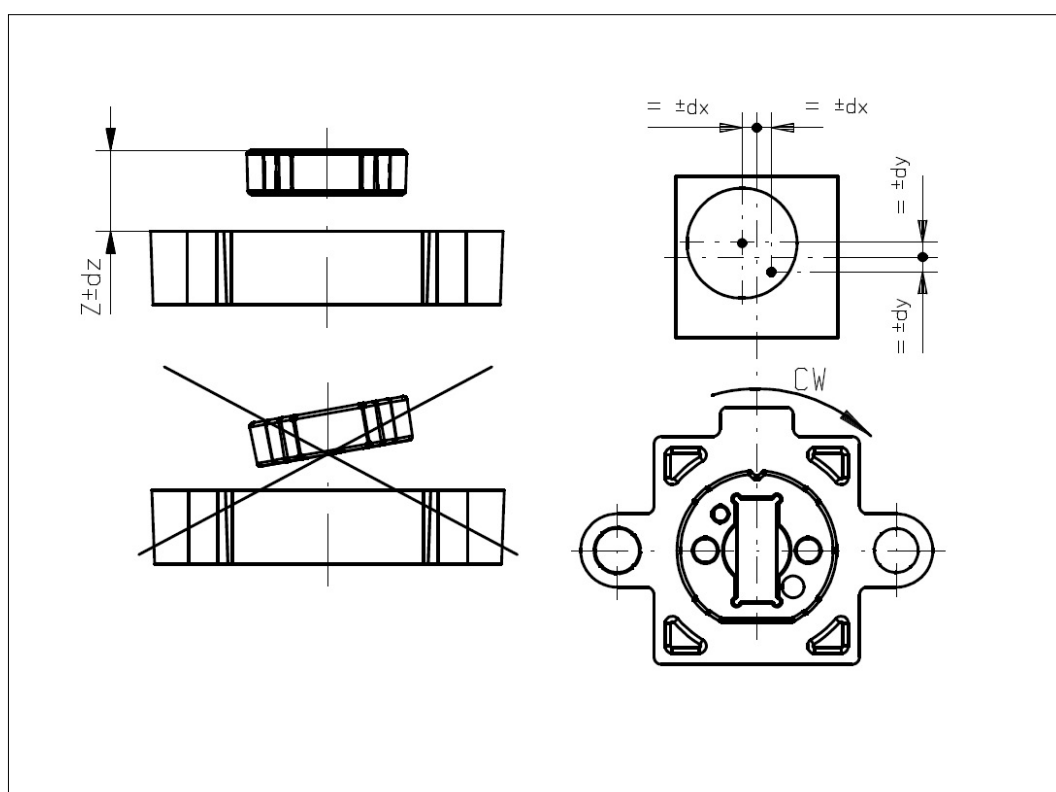
Mounting information

Working position (Z)

MH-C	7.50mm
MH-C2	7.50mm

Max. permitted misalignment of the magnetic actuator

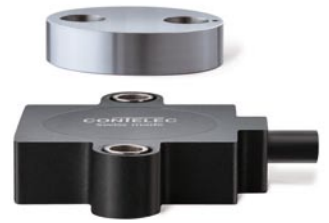
dx	±0.50mm
dy	±0.50mm
dz	±0.75mm



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Vert-X 31E7

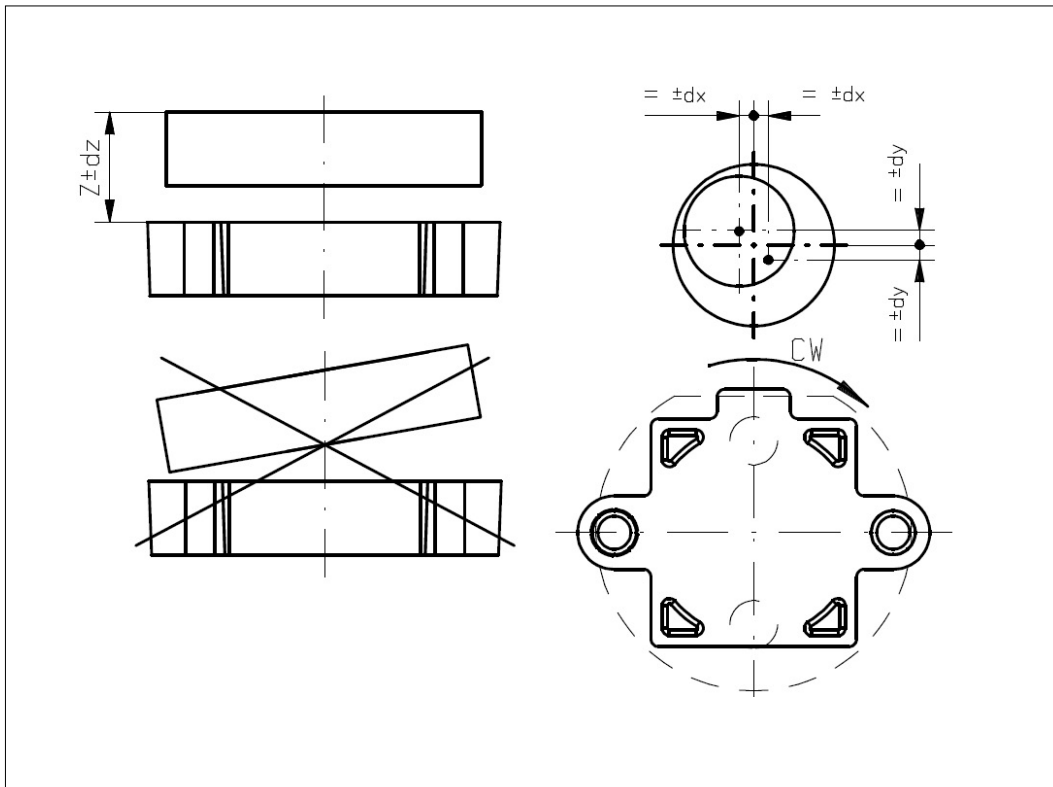
Mounting information

Working position (Z)

MH-C	15.80mm
MH-C2	15.80mm

Max. permitted misalignment of the magnetic actuator

dx	±1.00mm
dy	±1.00mm
dz	±2.00mm



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