

Sensor principle		MH-X2
Electrical data		
Measuring range	°	0 ... 360
Indep. linearity (without misalignment)	%	±0.5
Indep. linearity (with allowed misalignment @ 360°)	%	±1
Max. hysteresis	°	0.5
Resolution	ppr/channel	256 (1-128 ; 512 ; 1024)
Max. repeatability	°	0.35
Max. temperaturecoefficient of the output signal	ppm/°K	5
Power supply voltage	VDC	8 ... 35
Reverse polarity protection of power supply		yes
Redundancy feasible		no
Output driver TTL		
MTTFd / MTBF	years	533 / 533
Current consumption without load (typ.)	mA	20
Recomended ohmic load at output	kOhm	1
Max. capacitive load at output	nF	1
Electrical connection (A;B)		Cable 4pole
Cross section of single wires (A;B)	mm²	0.35 (AWG22)
Electrical connection (A;B;Z)		Cable 6pole
Cross section of single wires (A;B;Z)	mm²	0.25 (AWG24)
Output driver Differential RS-422		
MTTFd / MTBF	years	586 / 586
Current consumption without load (typ.)	mA	20
Recomended ohmic load at output	kOhm	0.12
Electrical connection (A;A';B;B')		Cable 6pole
Cross section of single wires (A;A';B;B')	mm²	0.25 (AWG24)
Electrical connection (A;A';B;B';Z;Z')		Cable 10pole
Cross section of single wires (A;A';B;B';Z;Z')	mm²	0.09 (AWG28)
Output driver Push-Pull/HTL		
MTTFd / MTBF	years	393 / 393
Current consumption without load (typ.)	mA	24
Max. output current	mA	30
Max. capacitive load at output	nF	1
Electrical connection (A;B)		Cable 4pole
Cross section of single wires (A;B)	mm²	0.35 (AWG22)
Electrical connection (A;B;Z)		Cable 6pole
Cross section of single wires (A;B;Z)	mm²	0.25 (AWG24)
Output driver Open collector		
MTTFd / MTBF	years	391 / 391
Current consumption without load (typ.)	mA	20
Max. output current	mA	30
Max. output voltage	VDC	35
Electrical connection (A;B)		Cable 4pole
Cross section of single wires (A;B)	mm²	0.35 (AWG22)
Electrical connection (A;B;Z)		Cable 6pole
Cross section of single wires (A;B;Z)	mm²	0.25 (AWG24)

Vert-X 31E - 24V / Incremental

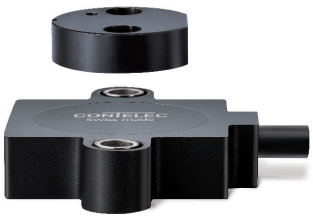
Applications
- Concrete pump
- E-Motor feedback system
- Fork lift

Features
- High protection class IP68
- Compact dimensions
- Very fast, non-contacting measuring method
- Very long life
- Applications under adverse ambient conditions possible (humidity, dampness, dust, vibrations etc.)
- Several possible resolutions
- Low temperaturecoefficient of the output signal

Errors and omissions excepted. Subject to change without notice. / State: 12.07.17

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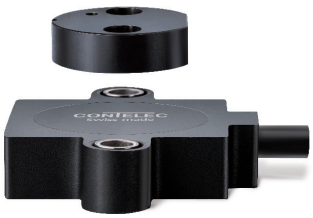
Mechanical data		
Mechanical angle	°	360 (continuous)
Protection class		IP68
Min. life	movements	no limitation
Operating & storage temperature	°C	-40 ... +85
IEC 68-2-6 Vibration (Amax = 0.75mm, f = 5 … 2000 Hz)	g	50
IEC 68-2-27 Shock	g	200

Standards		
EN 55022 class B, Emission radiated (30... 230 MHz)	dB(µV/m)	max. 30
EN 55022 class B, Emission radiated (230...1000MHz)	dB(µV/m)	max. 37
EN 61000-4-2, ESD (contact discharge / air discharge)	kV	±4 / ±8
EN 61000-4-3, Immission HF radiated (80... 1000 MHz)	V/m	30
EN 61000-4-4, Burst (on all lines)	kV	±1
EN 61000-4-5, Surge (lines to ground)	kV	±1
EN 61000-4-6, Immission HF conducted (0.15...80MHz)	Vemk	10
EN 61000-4-8, Immission magnetic field (50Hz)	A/m	300
IEC 60393-1 Insulation resistance (500VDC, 1bar, 2s)	GOhm	20
IEC 60393-1 Dielectric strength (VAC, 50Hz, 1min, 1bar)	kV	1

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Vert-X 31E - 24V / Incremental
Ordering code

Output characteristics / Output driver

TTL (A,B,Z)	Standard	1
TTL (A,B)	Optional	2
Differential RS-422 (A,A',B,B',Z,Z')	Optional	3
Differential RS-422 (A,A',B,B')	Optional	4
Push-Pull/HTL (A,B,Z)	Standard	5
Push-Pull/HTL (A,B)	Optional	6
Open collector (A,B,Z)	Optional	7
Open collector (A,B)	Optional	8
Special output driver	Optional	9

Output signal

Incremental	Standard	7

Power supply voltage

24VDC	Standard	1

Electrical connection

1	Optional	Cable 10pole
6	Standard	Cable 6pole
8	Optional	Cable 4pole
9	Optional	Special cable

Length of cable

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

Vert-X	3	1	E	5	a	6	3	6		1	7	5		6	0	2

Electrical angle

36	Standard	Electrical angle 360°

Sensor principle

6	MH-X2

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 acutator type 7
31E9	Optional	Special magnetic actuator

	MH-X2
Custom magnetic actuator	X
Custom cable	X
Custom output driver	X
Custom resolution (1-128 ; 512 ; 1024ppr)	X
Output of absolut position at power-on	X

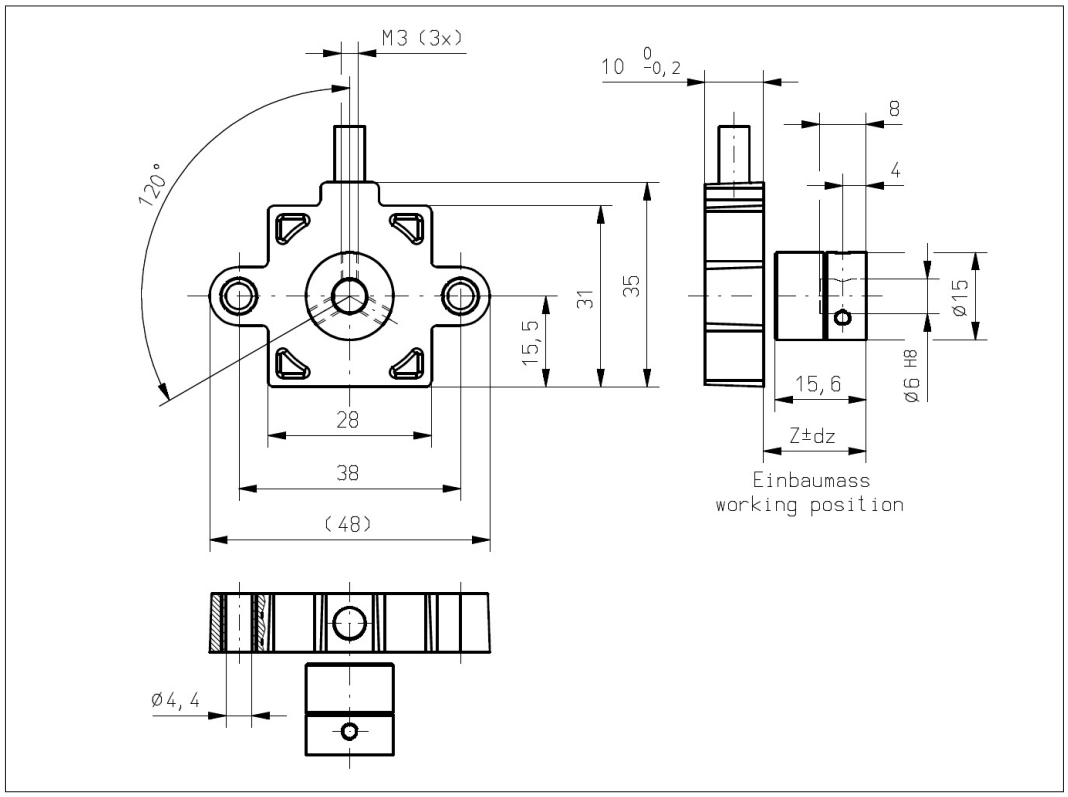
Options (on request)

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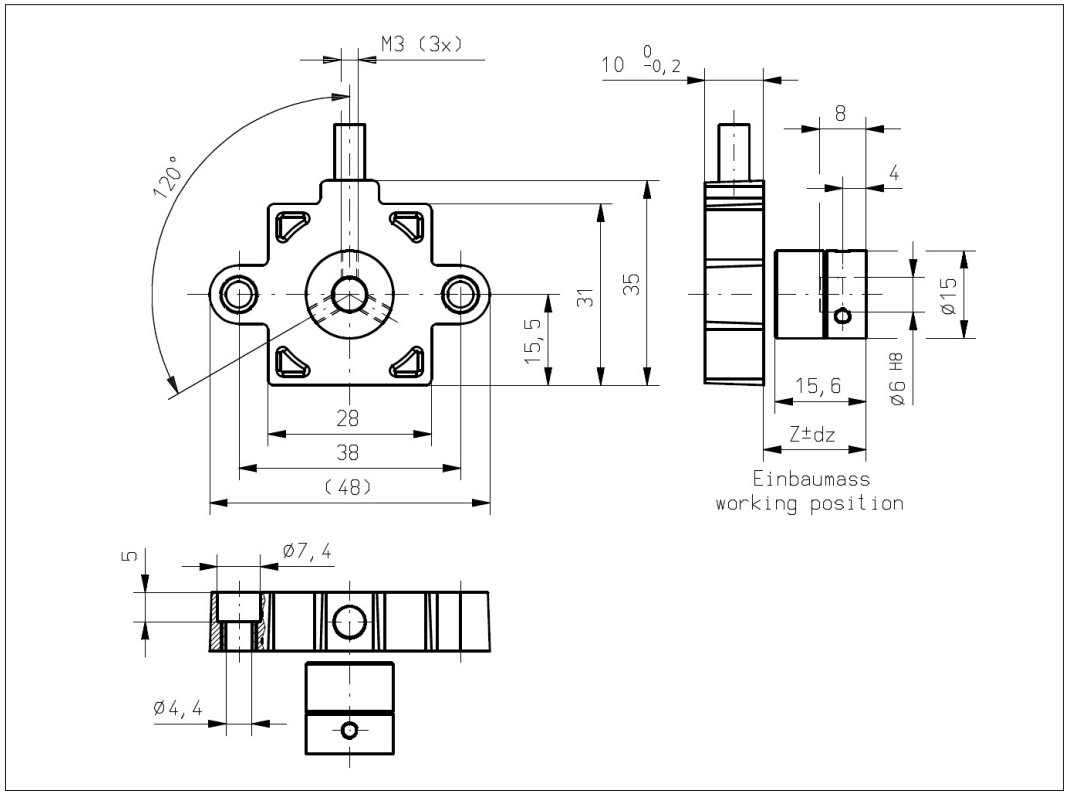




Vert-X 31E5axxx xxx xxx

Accessoires (incl.)
- None

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



Vert-X 31E5bxxx xxx xxx

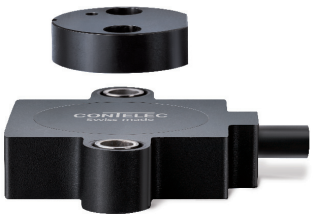
Accessoires (incl.)
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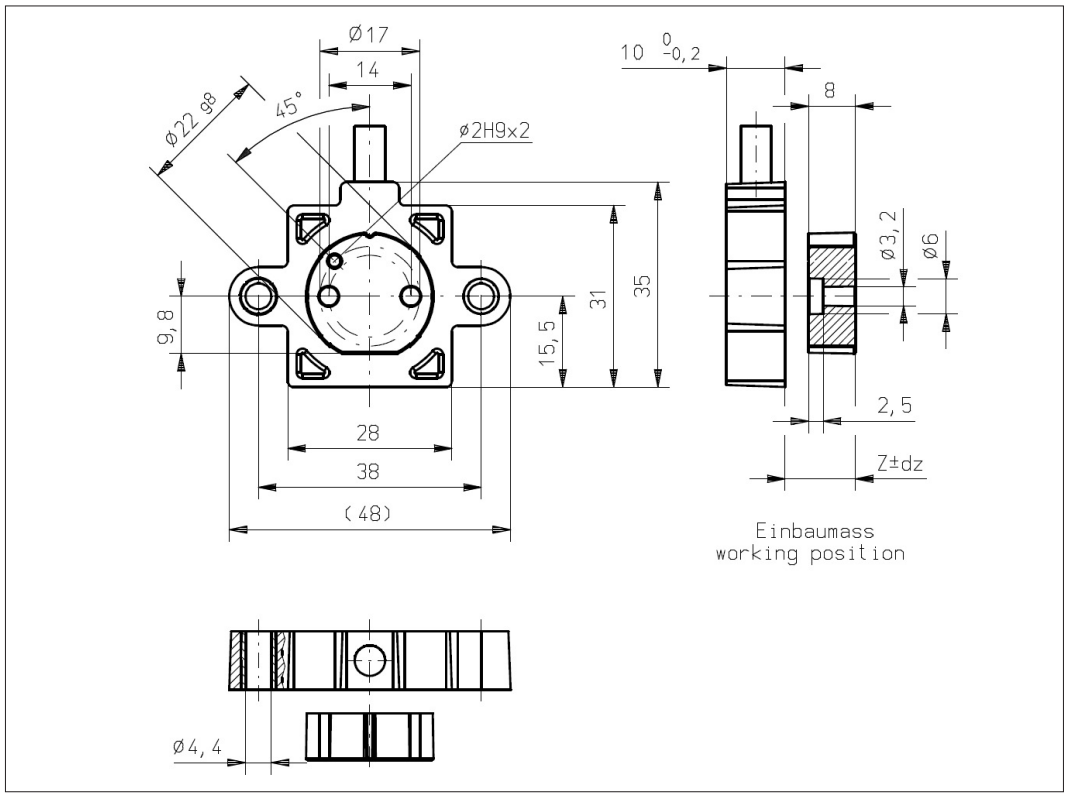
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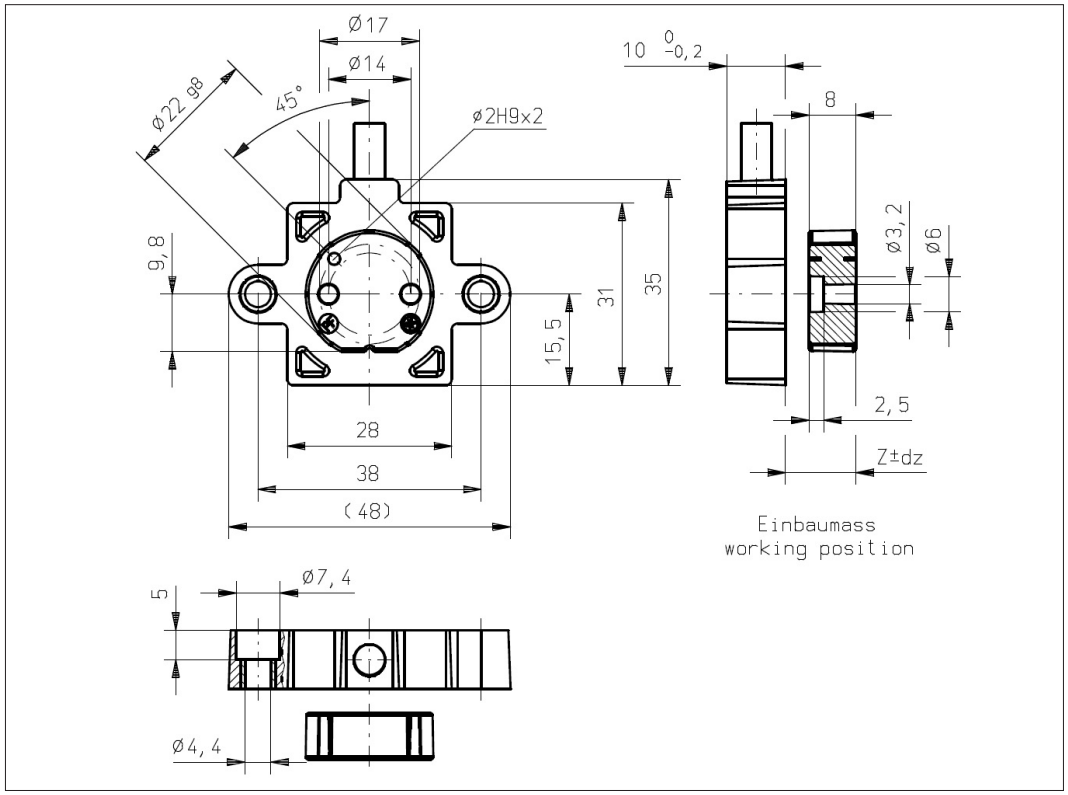




Vert-X 31E6axxx xxx xxx

Accessoires (incl.)
- None

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



Vert-X 31E6bxxx xxx xxx

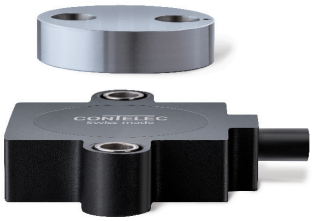
Accessoires (incl.)
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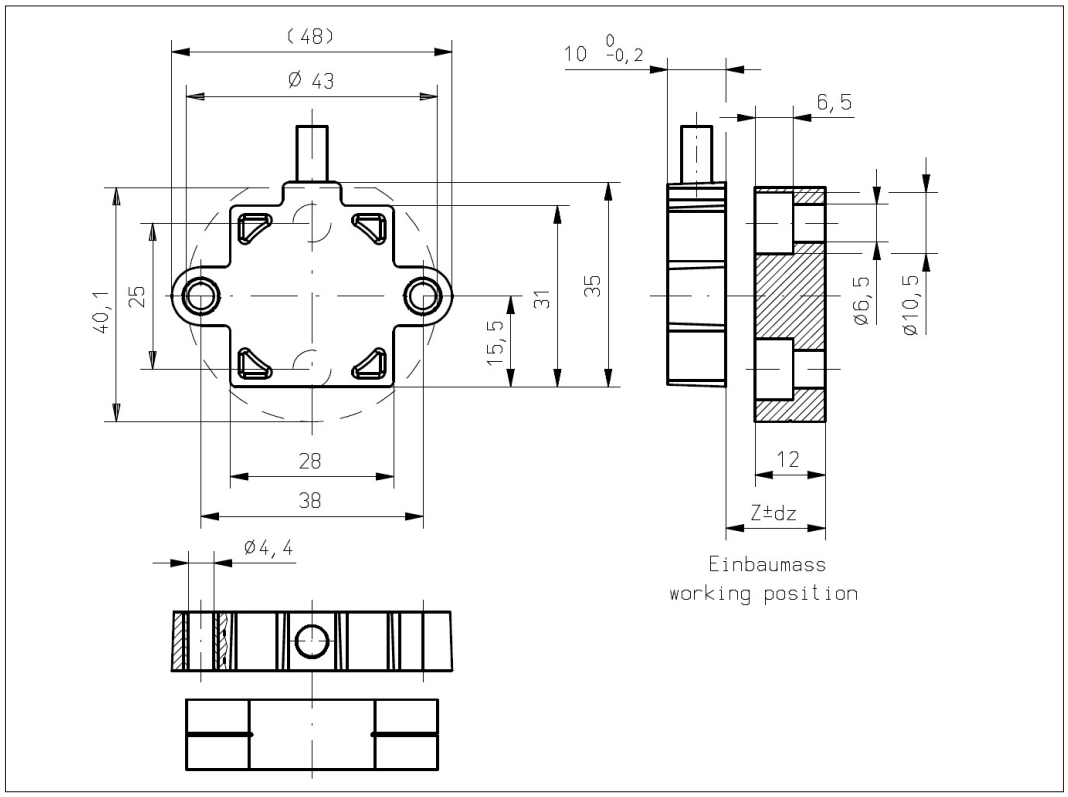
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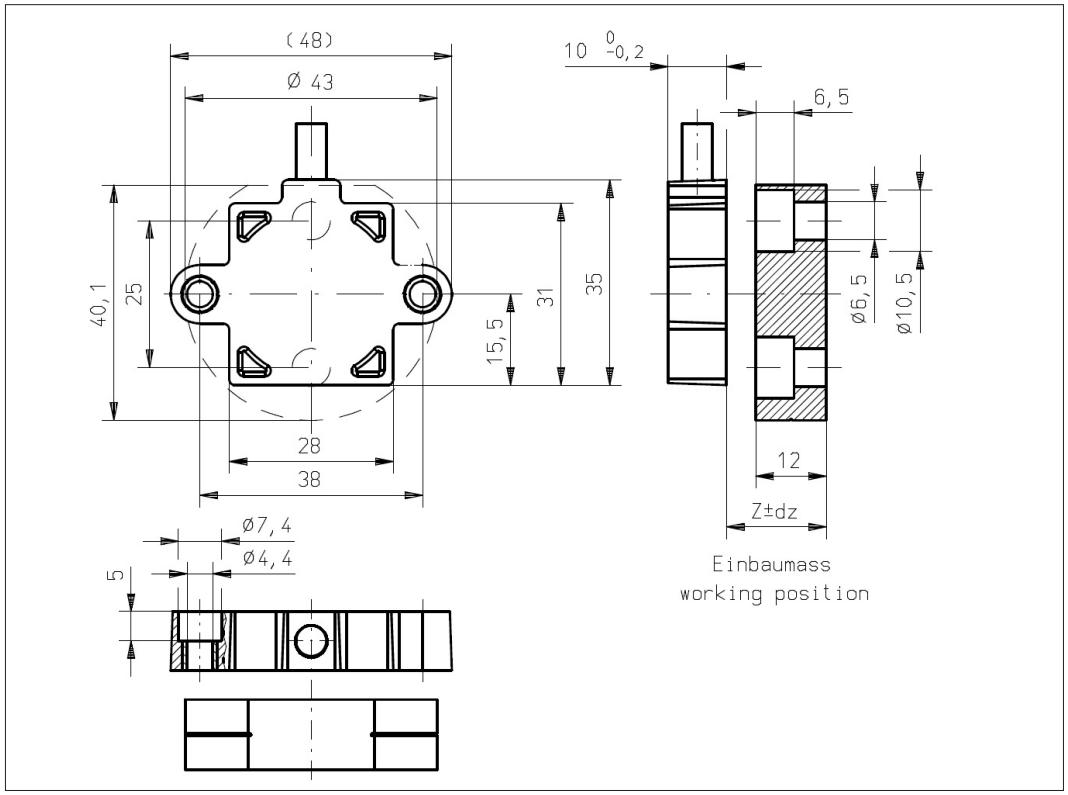




Vert-X 31E7axxx xxx xxx

Accessoires (incl.)
- None

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



Vert-X 31E7bxxx xxx xxx

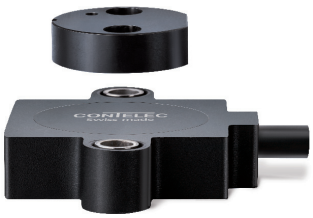
Accessoires (incl.)
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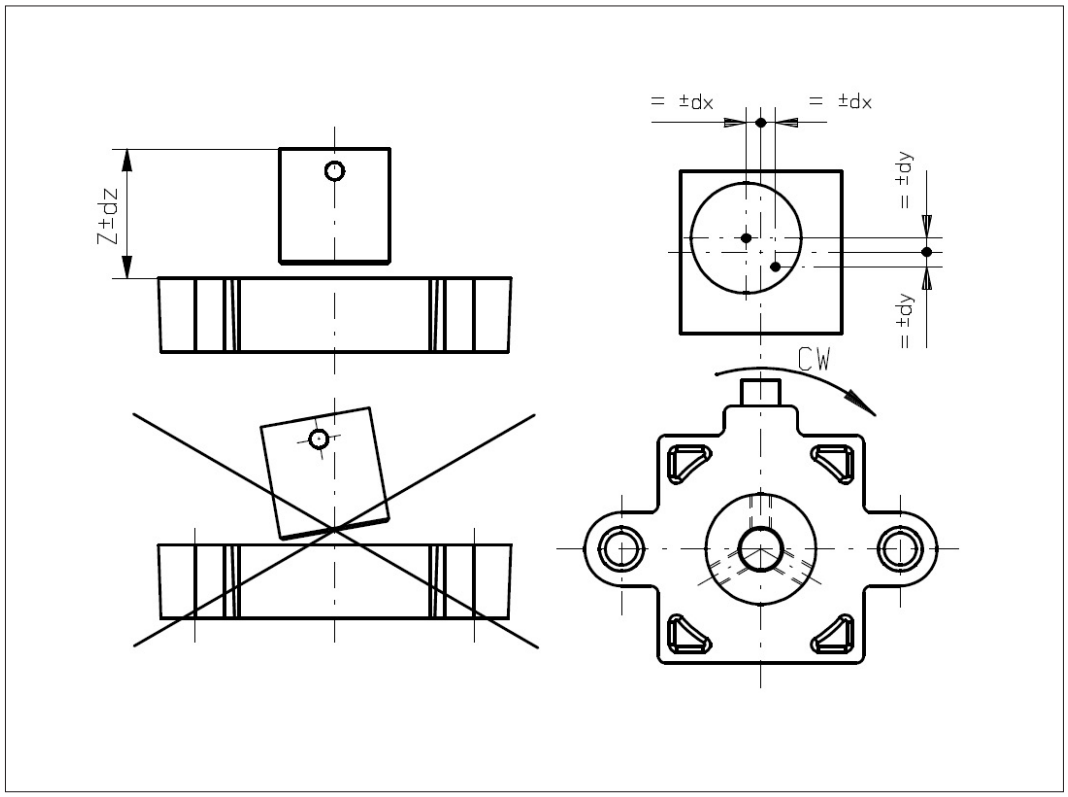
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Vert-X 31E5

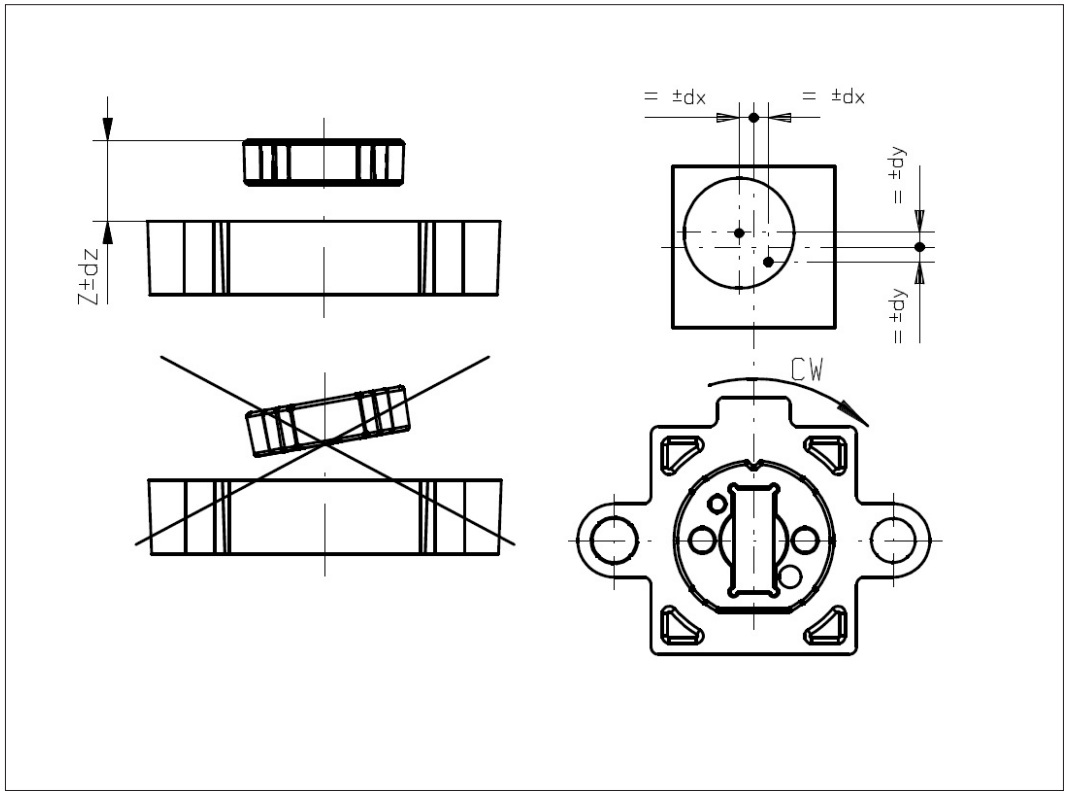
Mounting information

Working position (Z)

MH-X2	16.10mm

Max. permitted misalignment of the magnetic actuator

dx	±0.50mm
dy	±0.50mm
dz	±0.30mm



Vert-X 31E6

Mounting information

Working position (Z)

MH-X2	8.70mm

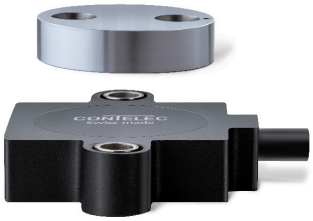
Max. permitted misalignment of the magnetic actuator

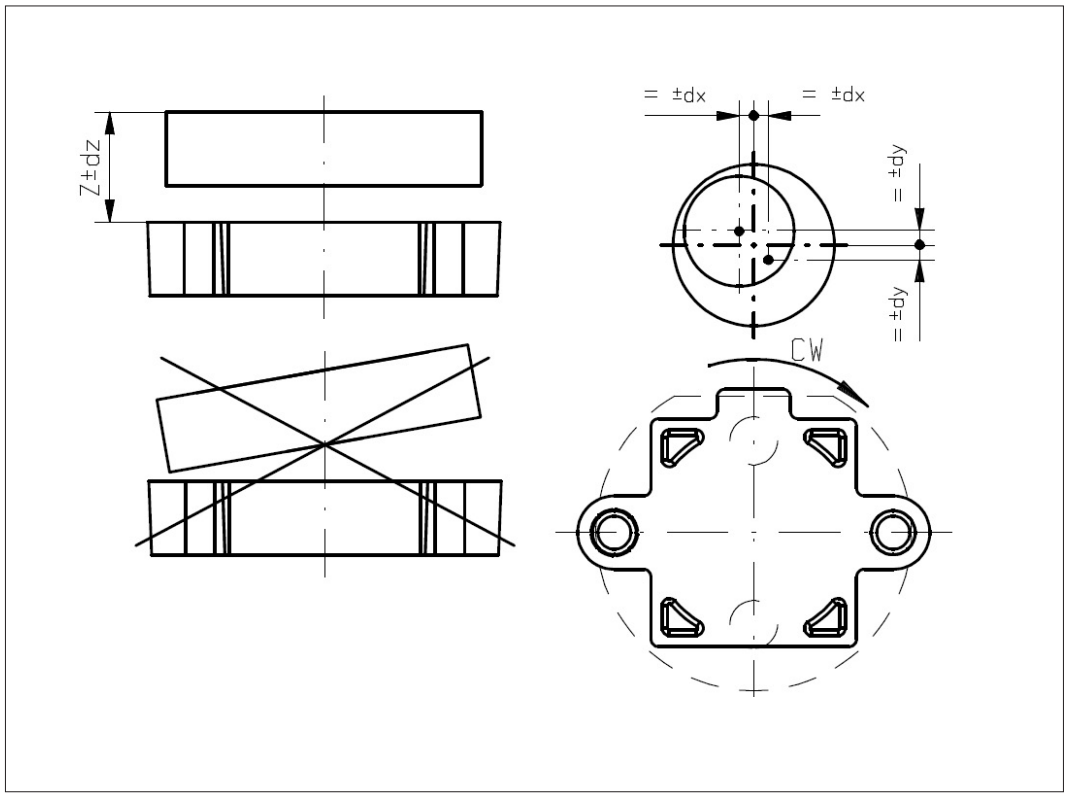
dx	±0.50mm
dy	±0.50mm
dz	±0.50mm

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Vert-X 31E7

Mounting information

Working position (Z)

MH-X2	13.00mm

Max. permitted misalignment of the magnetic actuator

dx	±1.00mm
dy	±1.00mm
dz	±0.80mm

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