

Vert-X 31E 5V / 10...90% Ub

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

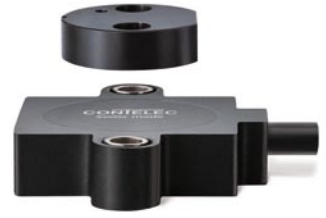
- Resolution of 12bit
- Full redundancy possible
- Lower price than MH-C2

Features MH-C2

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

Errors and omissions excepted. Subject to change without notice. / State: 13.07.11

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	50	50
MTTFd / MTBF	years	668 / 668	308 / 308
Power supply voltage	VDC	5 (±10%)	5 (±10%)
Current consumption without load (typ.) fast mode	mA	(14)	(15)
Current consumption without load (typ.) slow mode	mA	9	10
Min. ohmic load at output	kOhm	10	10
Max. capacitive load at output	nF	100	100
Reverse polarity protection of power supply		yes	no
Electrical connection		Cable 3pole	Cable 3pole
Cross section of single wires	mm ²	0.56 (AWG20)	0.56 (AWG20)
Redundancy feasible		yes	no
Electrical connection redundant		Cable 6pole	-
Cross section of single wires redundant	mm ²	0.25 (AWG24)	-
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, Immission 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, Immission HF conducted (0.15...80MHz)	Vemk	10	10
EN 61000-4-8, Immission 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 5V / 10...90% Ub
Ordering code**

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

Output characteristics		Standard	Optional	1	2	3	4	A	B	C	D	E	F	G	H	P
	Positive gradient CW	Standard														
	Positive gradient CCW	Optional														
	Redundant, positive gradient CW	Optional														
	Redundant, positive gradient CCW	Optional														
	Redundant, crossed signal curves	Optional														
	Positive gradient CW with 1 switch output*	Optional														
	Positive gradient CCW with 1 switch output*	Optional														
	Positive gradient CW with 2 switch outputs*	Optional														
	Positive gradient CCW with 2 switch outputs*	Optional														
	Sense of rotation settable	Optional														
	Zero point & sense of rotation settable	Optional														
	Middle point & sense of rotation settable	Optional														
	Start + end point & sense of rotation settable	Optional														
	Programmable with Vert-X EasyAdapt	Optional														

Output signal		Standard	Optional	2	3
	10% ... 90% Ub	Standard			
	x% ... y% Ub (within 5 ... 95%)	Optional			

Power supply voltage		Standard	Optional	2
	5VDC	Standard		

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

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

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

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

Sensor principle		Standard	Optional	7	8
	MH-C	Standard			
	MH-C2	Optional			

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

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

	MH-C	MH-C2
Custom magnetic actuator	X	X
Custom cable	X	X
Interface x% ... y% Ub (within 5% ... 95% Ub)	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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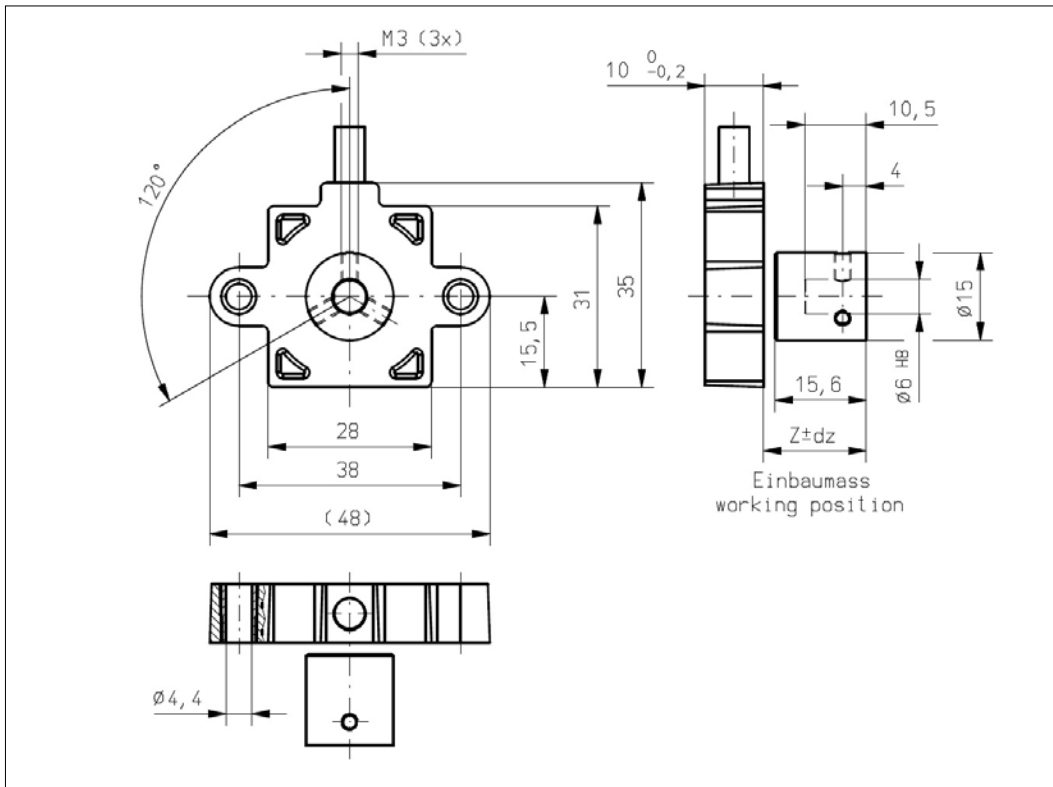
Vert-X 31E5axxx xxx 4xx
Vert-X 31E5axxx xxx 6xx

Accessoires (incl.)

- None

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

see mounting information



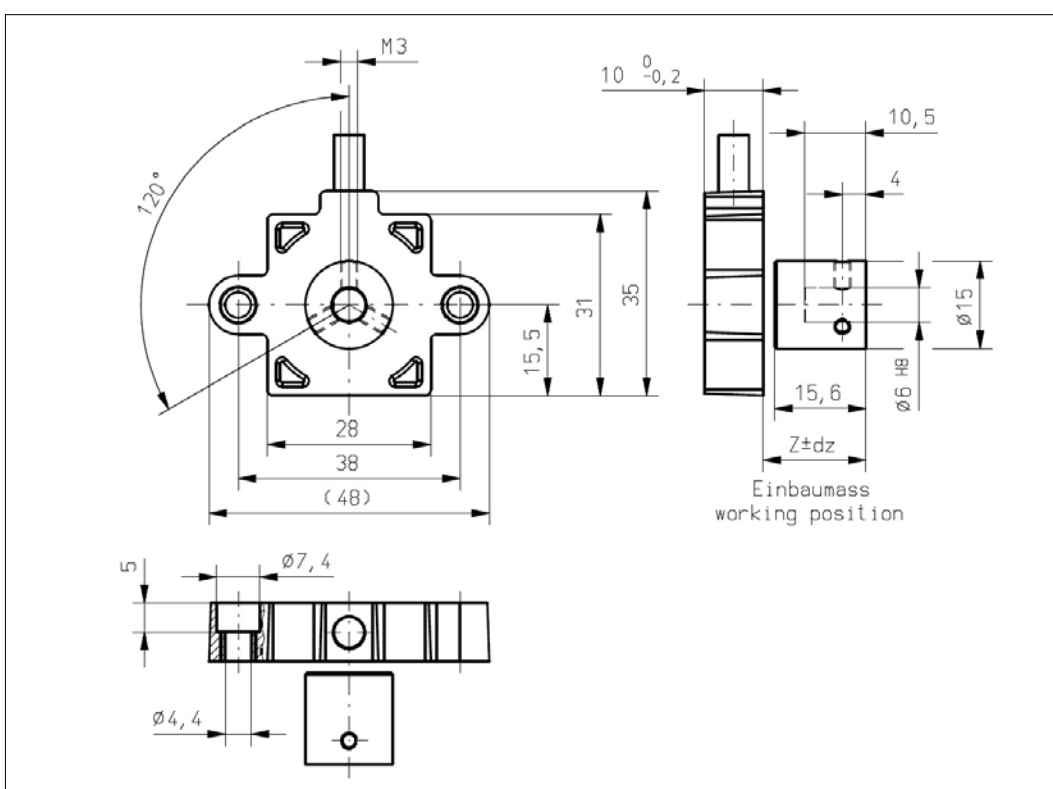
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Vert-X 31E5bxxx xxx 6xx

Accessoires (incl.)

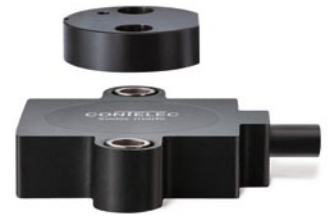
- None

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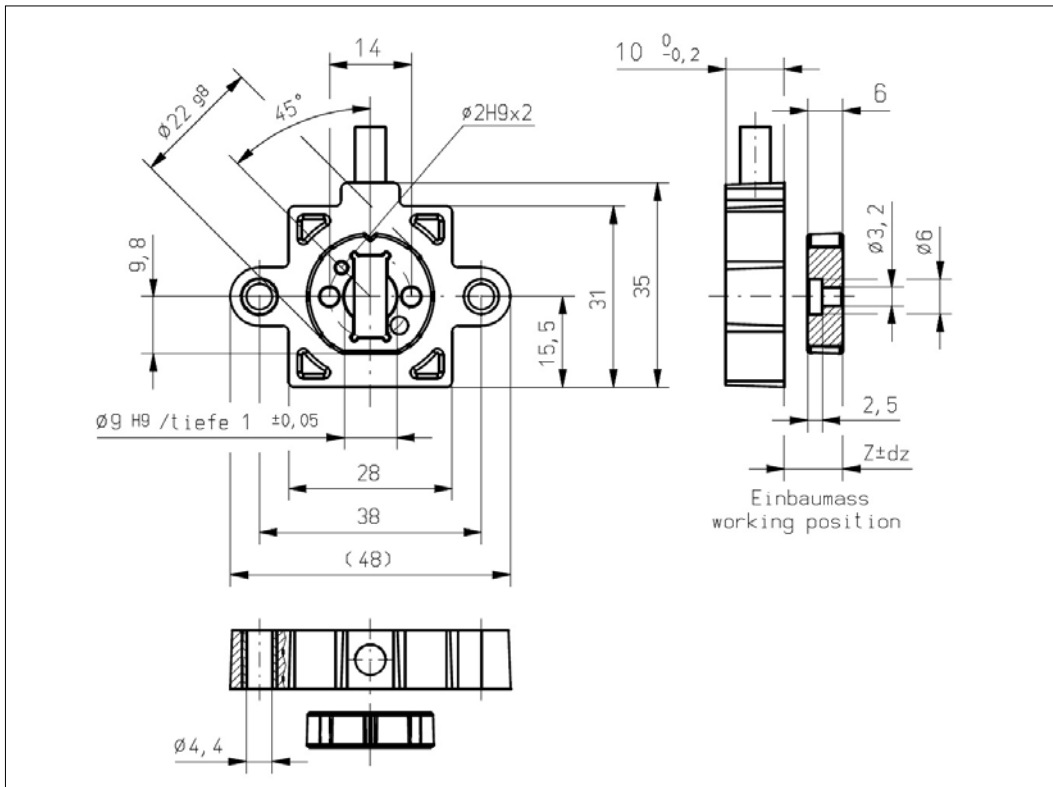
Vert-X 31E6axxx xxx 4xx
Vert-X 31E6axxx xxx 6xx

Accessoires (incl.)

- None

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see mounting information



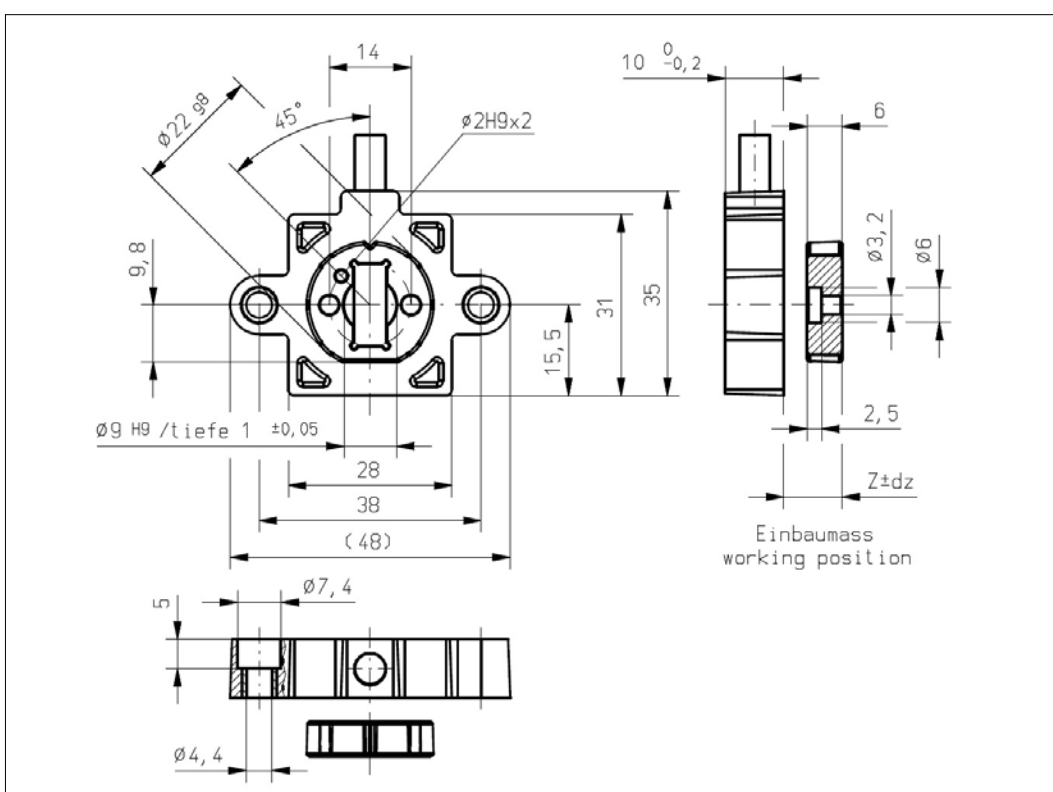
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Accessoires (incl.)

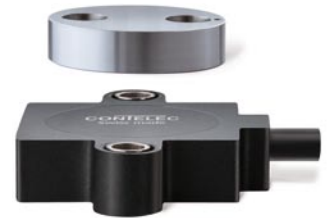
- None

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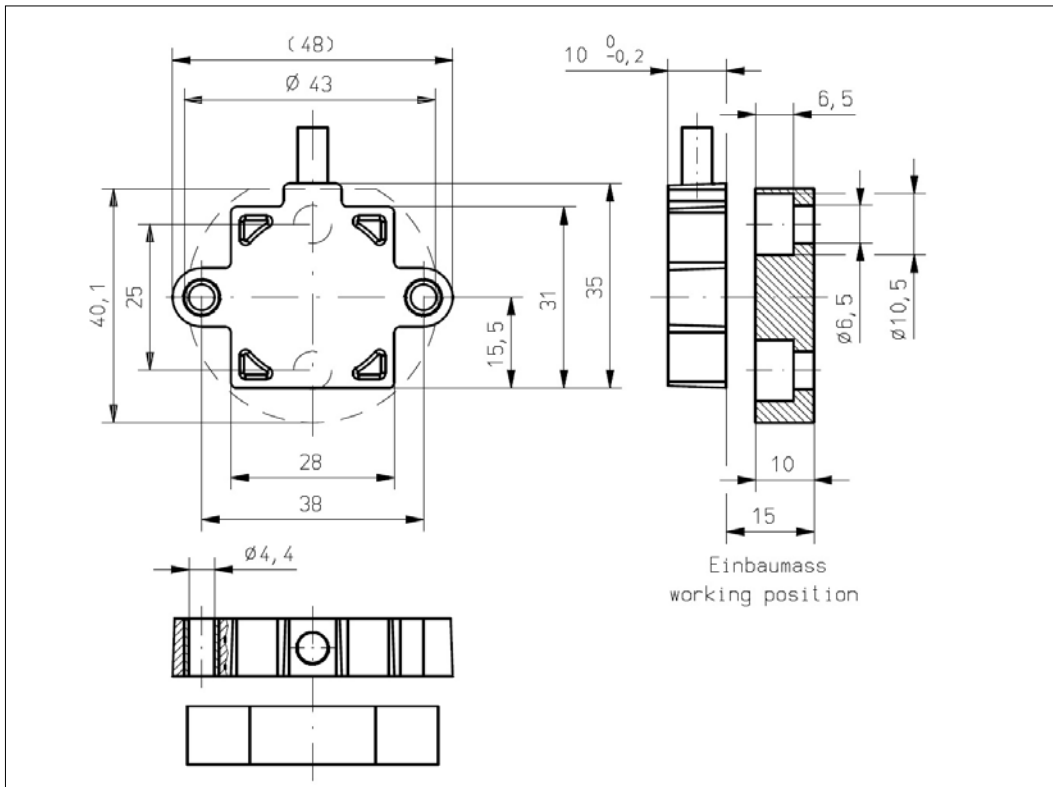
Vert-X 31E7axxx xxx 4xx
Vert-X 31E7axxx xxx 6xx

Accessoires (incl.)

- None

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see mounting information



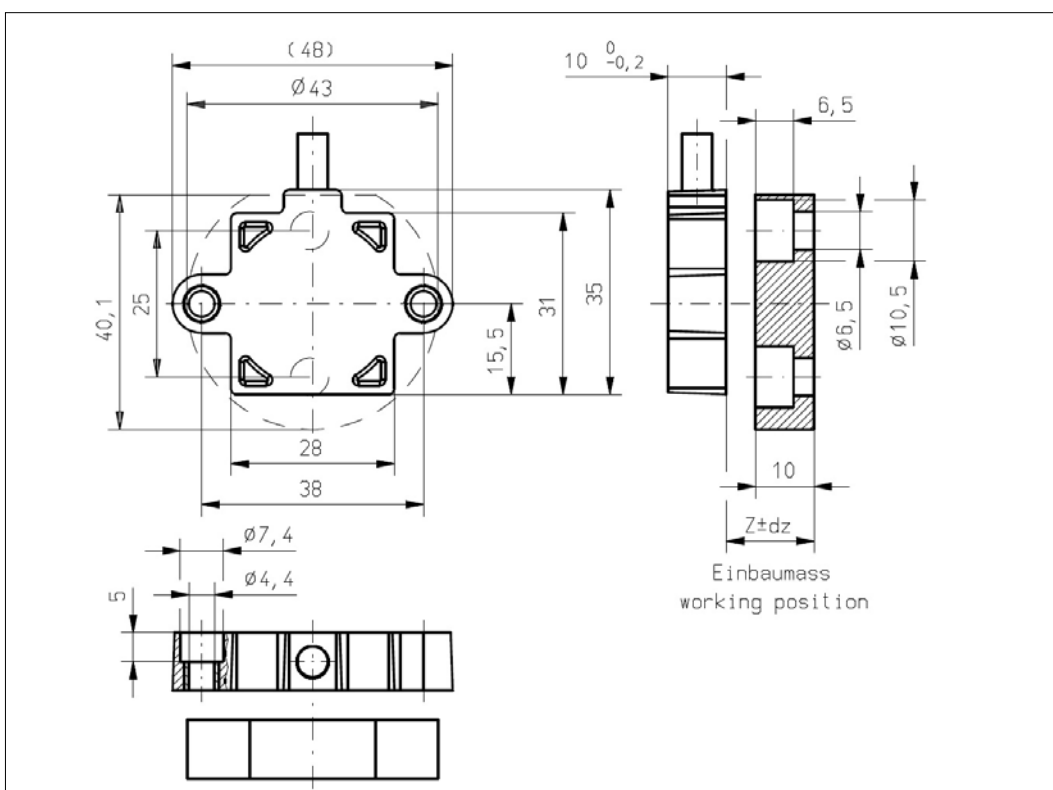
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Vert-X 31E7bxxx xxx 6xx

Accessoires (incl.)

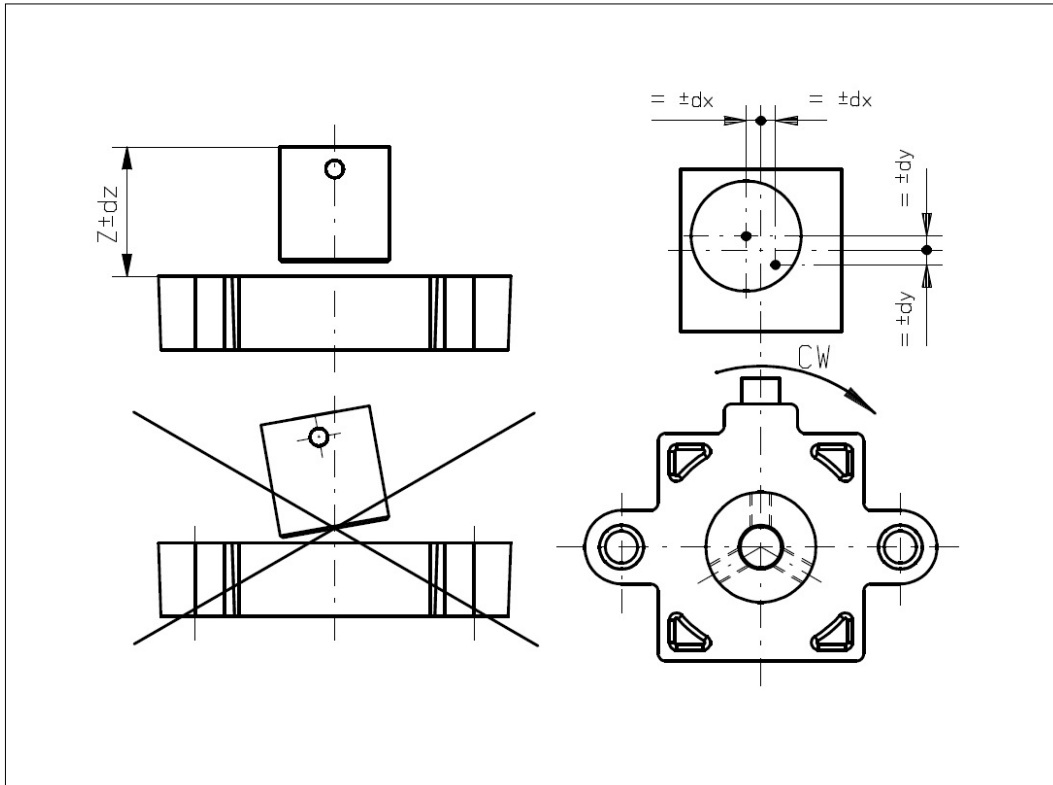
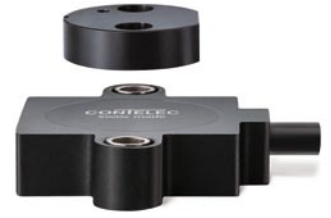
- None

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

see mounting information



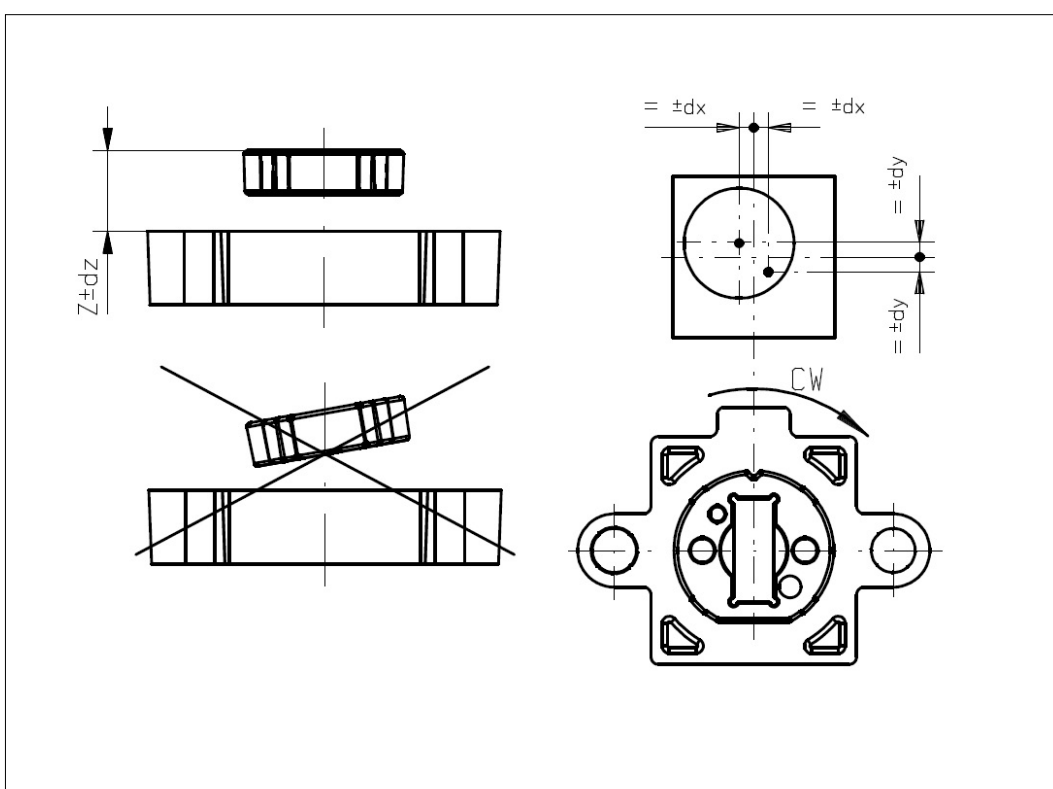
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	17.50mm
MH-C redundant	17.00mm
MH-C2	17.50mm

Max. permitted misalignment of the magnetic actuator

dx	±0.50mm
dy	±0.50mm
dz	±1.00mm



Vert-X 31E6

Mounting information

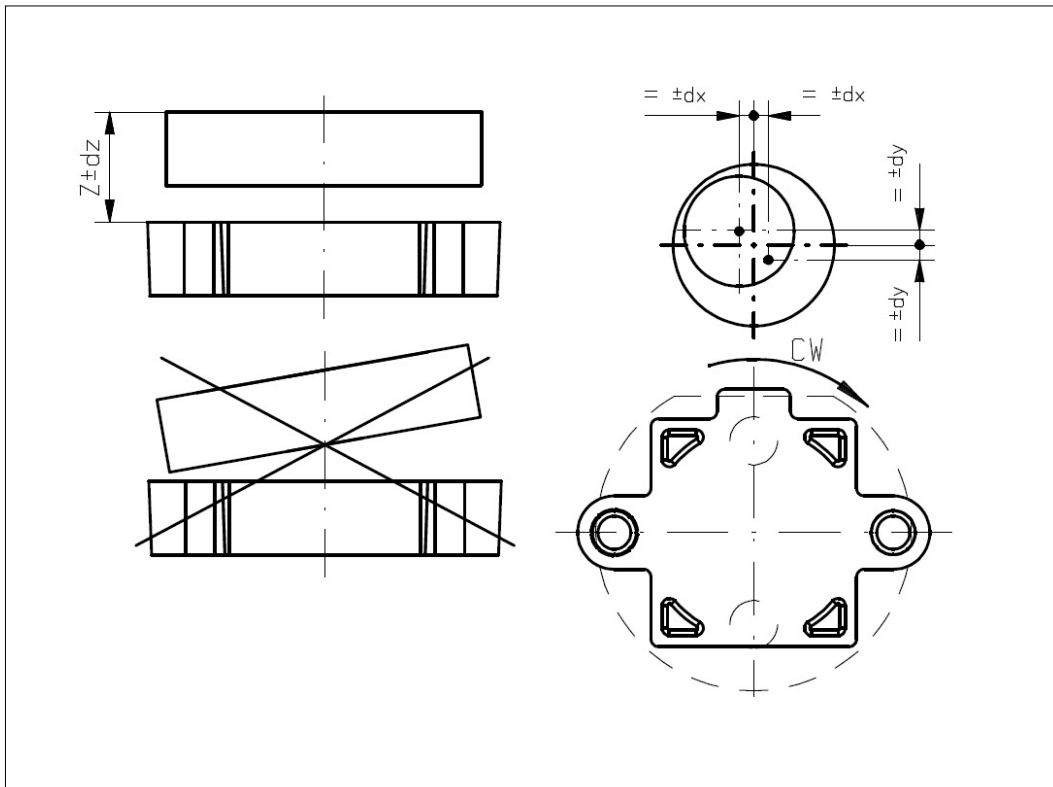
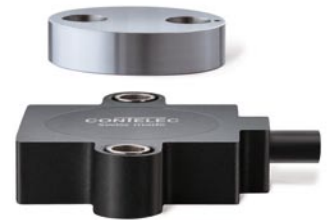
Working position (Z)

MH-C	7.50mm
MH-C redundant	7.00mm
MH-C2	7.50mm

Max. permitted misalignment of the magnetic actuator

dx	±0.50mm
dy	±0.50mm
dz	±0.75mm

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	15.80mm
MH-C redundant	15.30mm
MH-C2	15.80mm

Max. permitted misalignment of the magnetic actuator

dx	$\pm 1.00\text{mm}$
dy	$\pm 1.00\text{mm}$
dz	$\pm 2.00\text{mm}$

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