



## Vert-X 22E - 24V / SPI

### Applications

- Wind vanes
- Valve control
- Level sensor
- Special purpose vehicles

### Features

- High protection class IP68
- Flat design
- Non-contacting measuring method
- Very long life
- High accuracy of measurement
- Use in cramped installation conditions
- Full resolution and accuracy at programmed electrical angle

Sensor principle		MH-C	MH-C2
<b>Electrical data</b>			
Measuring range	°	0 ... 360	-
Indep. linearity (without misalignment)	% of meas. range	±0.3	-
Indep. linearity (with allowed misalignment @ 360°)	% of meas. range	±0.5	-
Max. hysteresis	°	0.1	-
Resolution	bit	14	-
Max. repeatability	°	0.1	-
Sample rate fast mode	kHz	2.2	-
Sample rate slow mode	kHz	(0.55)	-
System propagation delay fast mode	µs	400	-
System propagation delay slow mode	µs	(600)	-
Max. temperature coefficient of the output signal	ppm/°K	25	-
MTTFd / MTBF	years	668 / 668	-
Power supply voltage	VDC	5 (±10%)	-
Current consumption without load (typ.) fast mode	mA	19	-
Current consumption without load (typ.) slow mode	mA	(14)	-
Min. ohmic load at output	kOhm	-	-
Max. capacitive load at output	nF	-	-
Reverse polarity protection of power supply		yes	-
Electrical connection axial		Ribbon cable 6pole	-
Cross section of single wires	mm <sup>2</sup>	0.09 (AWG28)	-
Electrical connection radial		Cable 6pole	-
Cross section of single wires	mm <sup>2</sup>	0.25 (AWG24)	-
Redundancy feasible		yes	-
Electrical connection redundant axial		Ribbon cable 10pole	-
Cross section of single wires redundant	mm <sup>2</sup>	0.09 (AWG28)	-
Electrical connection redundant radial		Cable 10pole	-
Cross section of single wires redundant	mm <sup>2</sup>	0.09 (AWG28)	-
<b>Mechanical data</b>			
Mechanical range	°	360 (continuous)	-
Protection class		IP68	-
Min. life	movements	no limitation	-
Operating & storage temperature (with wires)	°C	-40 ... +125	-
Operating & storage temperature (with ribbon cable)	°C	-40 ... +105	-
Operating & storage temperature (with round cable)	°C	-40 ... +85	-
IEC 68-2-6 Vibration (Amax = 0.75mm, f = 5 ... 2000 Hz)	g	50	-
IEC 68-2-27 Shock	g	200	-
<b>Standards</b>			
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	30	-
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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Contelec AG  
 Portstrasse 38  
 CH-2503 Biel/Bienne  
 Phone +41 (0)32 3665600  
 Telefax +41 (0)32 3665604  
 sales@contelec.ch

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## Vert-X 22E - 24V / SPI Ordering code

		<b>Output characteristics</b>				<b>Electrical connection / axial</b>								
		Positive gradient CW	Standard	1			2 Optional Ribbon cable 10pole							
		Positive gradient CCW	Optional	2			7 Standard Ribbon cable 6pole							
		Redundant, positive gradient CW	Optional	3			9 Optional Special cable ; special wires							
		Redundant, positive gradient CCW	Optional	4										
		Redundant, crossed signal curves	Optional	5										
		<b>Output signal</b>				<b>Electrical connection / radial</b>								
		SPI	Standard	8			1 Optional Round cable 10pole							
		<b>Power supply voltage</b>				6 Standard Round cable 6pole								
		24VDC	Standard	1			9 Optional Special cable ; special wires							
<b>Vert-X</b>	<b>2</b>	<b>2</b>	<b>E</b>	<b>2</b>	<b>7</b>	<b>3</b>	<b>6</b>	<b>1</b>	<b>8</b>	<b>1</b>	<b>7</b>	<b>0</b>	<b>5</b>	
						<b>Electrical angle</b>								
						36	Standard	Electrical angle 360°						
						xx	Optional	03 to 35; Declaration in 10° steps						
						99	Optional	Special angle						
						<b>Sensor principle</b>								
						7	MH-C							
						<b>Mechanical version</b>								
		22E1	Optional	Servo mount size 9 ; magnetic actuator type 1										
		22E2	Standard	Servo mount size 9 ; magnetic actuator type 2										
		22E9	Optional	Special housing ; special magnetic actuator										

	MH-C	MH-C2
Custom magnetic actuator	X	-
Custom modification of the housing	X	-
Custom cable / wires	X	-
Sample rate in slow mode	X	-
Switch functions TTL (max. 2)	X	-
Special characteristic curve	-	-
Special electrical angle within 30° to 360° (ex factory)	X	-
Electrical angle programmable (Software)	-	-
Start & end point settable (Additional wires)	-	-
Sense of rotation CW/CCW settable / programmable (Additional wires or Software)	-	-
Index point settable / programmable (Additional wires or Software)	-	-

### Options (on request)

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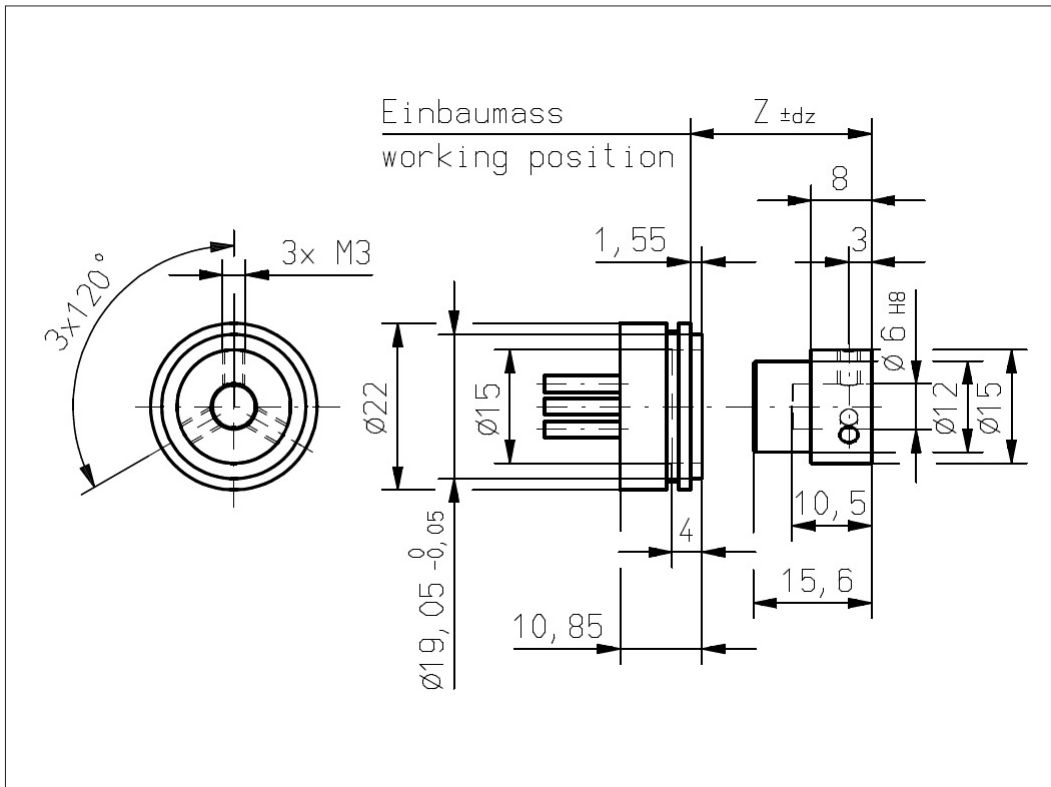
**Vert-X 22E2 xxx xxx 2xx**  
**Vert-X 22E2 xxx xxx 7xx**

**Accessoires (incl.)**

- 1x Fixation clip
- 2x Slotted cylinder head screw M3x8

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

see mounting information



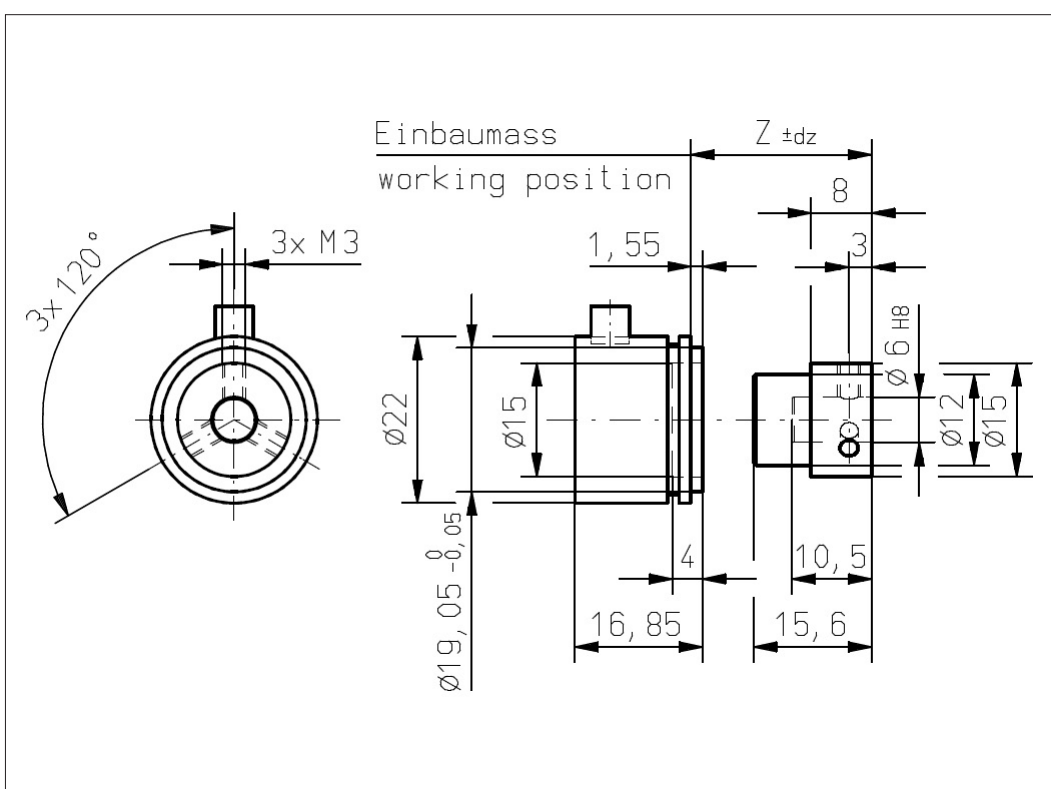
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**Vert-X 22E2 xxx xxx 6xx**

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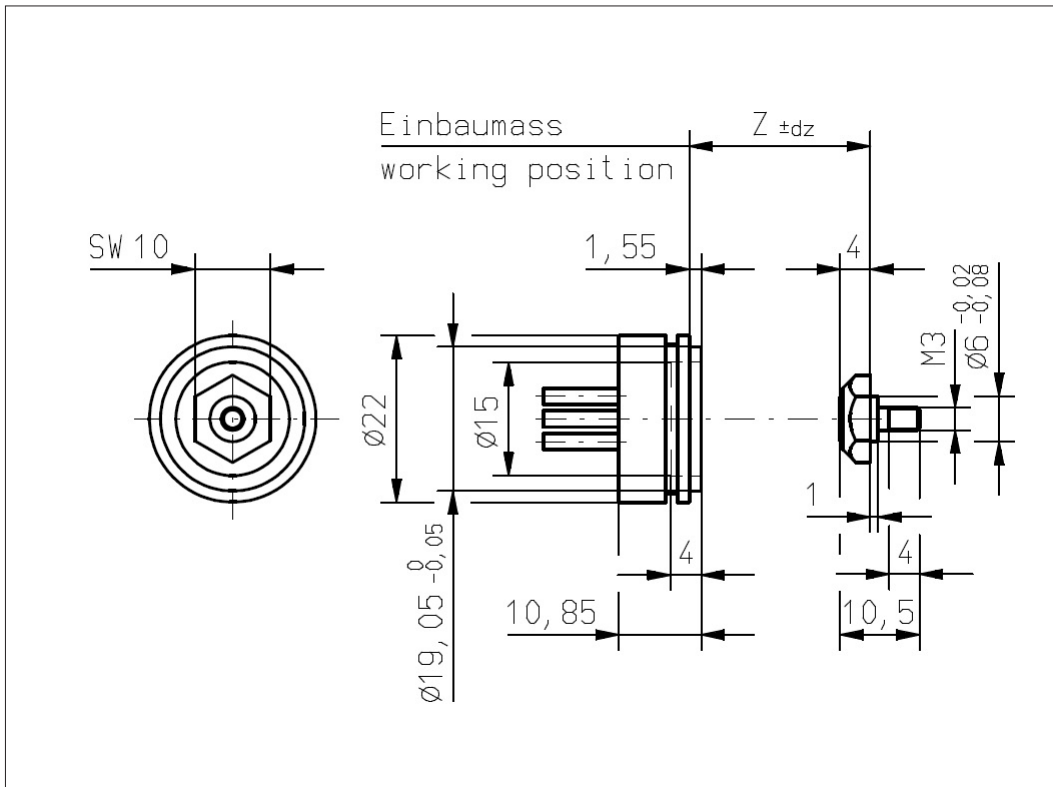
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**Vert-X 22E1 xxx xxx 7xx**

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- 2x Slotted cylinder head screw M3x8

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see mounting information



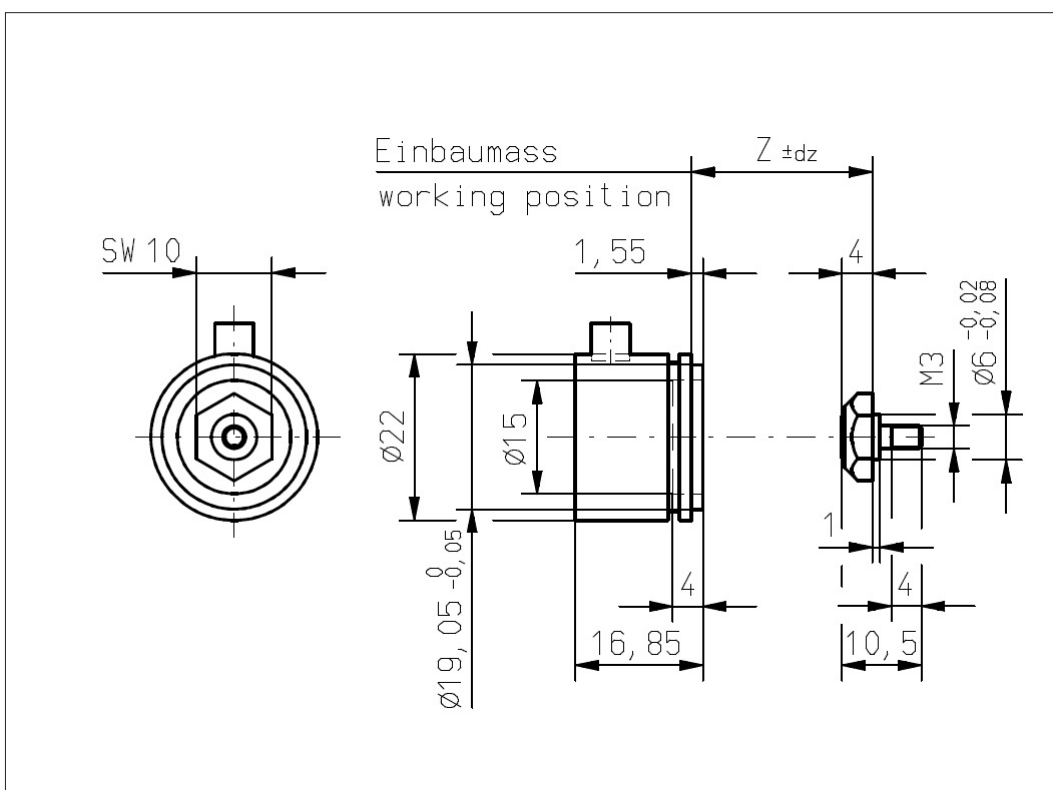
**Vert-X 22E1 xxx xxx 1xx**  
**Vert-X 22E1 xxx xxx 6xx**

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- 1x Fixation clip
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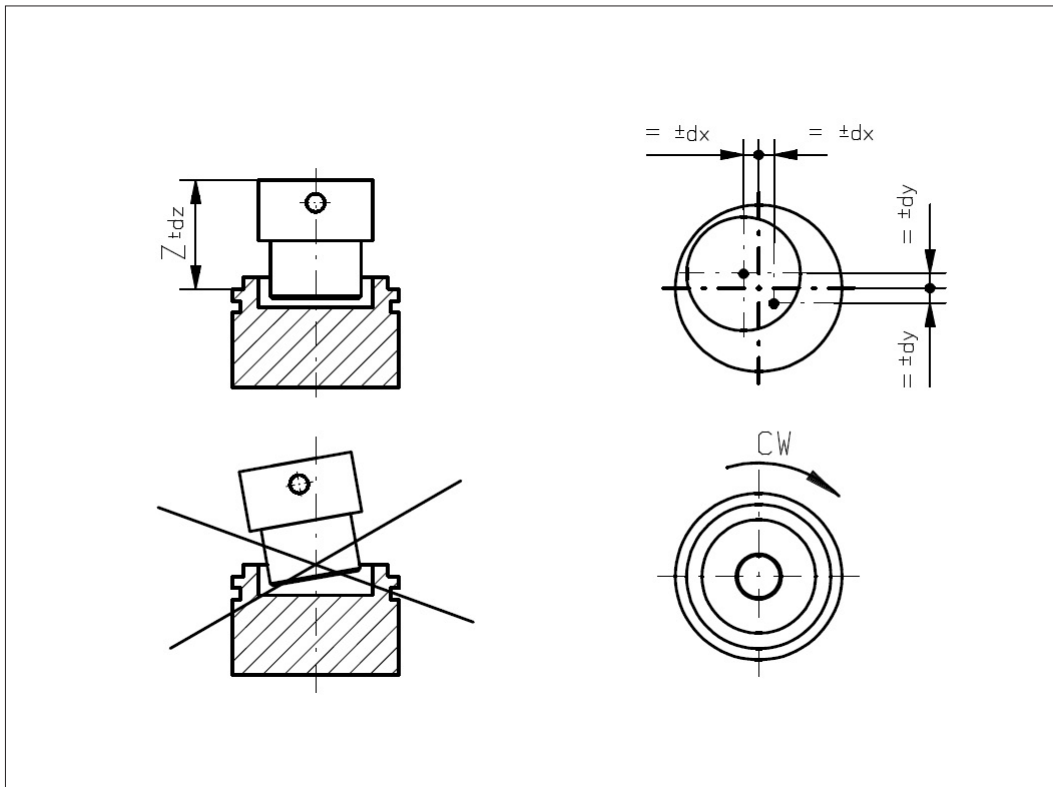
**Vert-X 22E2**  
**Mounting information**

**Working position (Z)**

MH-C	14.40mm
MH-C redundant	13.90mm

**Max. permitted misalignment of the magnetic actuator**

dx	±0.25mm
dy	±0.25mm
dz	±0.5mm



**Vert-X 22E1**  
**Mounting information**

**Working position (Z)**

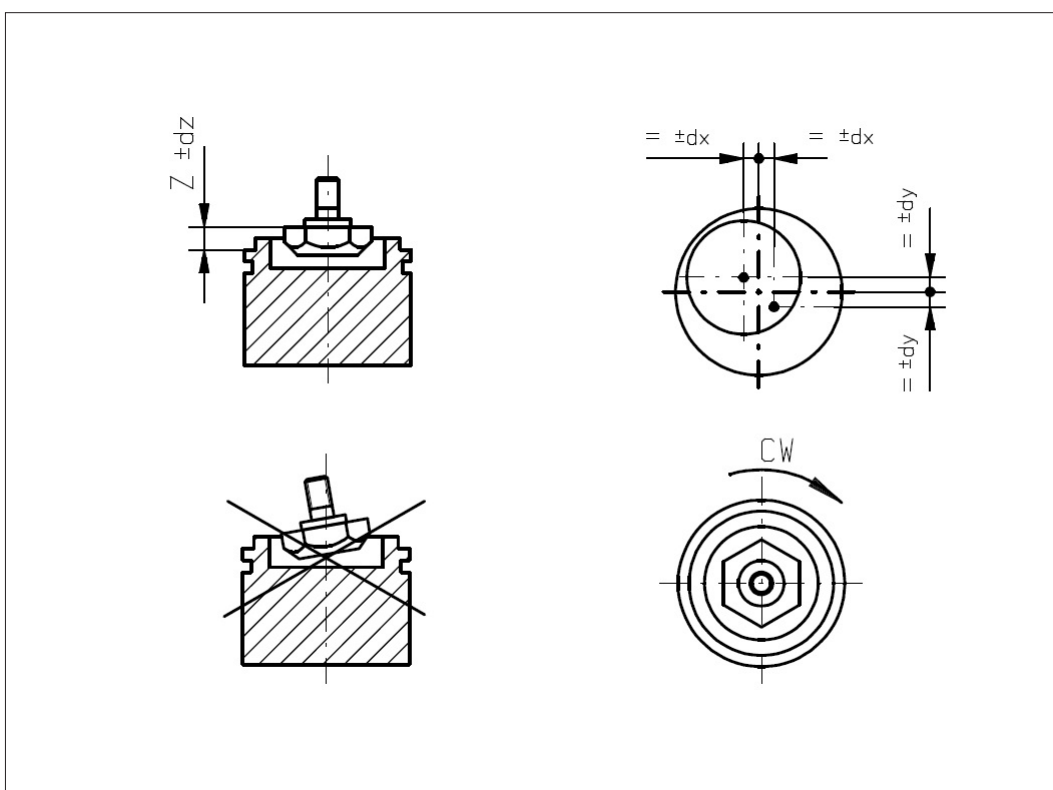
MH-C	3.00mm
MH-C redundant	2.50mm

**Max. permitted misalignment of the magnetic actuator**

dx	±0.25mm
dy	±0.25mm
dz	±0.5mm

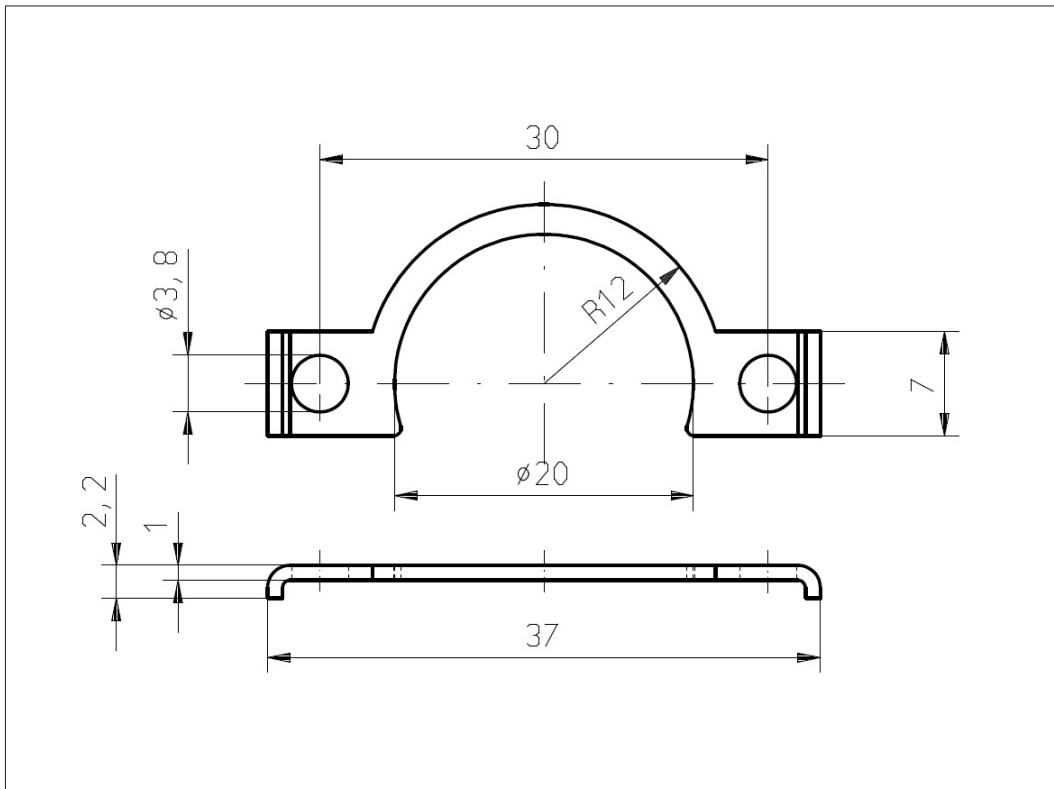
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**Vert-X 22E**  
**Accessoires**  
Fixation clip



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